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A NEW METHOD OF ARTHROTOMY FOR OLD DISLOCATIONS OF THE SHOULDER, BASED ON EXPERIENCE IN THE RADICAL BREAST REMOVAL

BY E. WYLLYS ANDREWS, M. D., CHICAGO, ILLINOIS

I HAD always disliked the operation for old unreduced dislocations of the humerus. It seemed to me to contain elements of risk and uncertainty, and to be bloody and unpleasant to perform.

Since adopting my transmuscular incision, derived from experience in breast surgery, I find the operation comparatively safe and rapid; free from the old incubus of dread and uncertainty.

That surgeons and orthopedists look askance at shoulder-joint arthrotomy by the old methods, I had good evidence when I submitted one of my recent cases, before operating, to Professor Hoffa, of Berlin. Although he was doing the bloody reduction on numerous hip cases here, he shrank from tackling this old shoulder dislocation, which was in a very fat subject, and advised letting it alone or resecting the joint.

It is true that many serious and fatal accidents have been reported in the efforts at "bloodless" reduction, so that "bloodless surgery," so far as concerns the shoulder, has a gory record of causing about fifty recorded cases of hemorrhage, mostly fatal. As these cases are well known in the literature, I will not dwell much on them.

Frank Hamilton, in 1884, collated 24 cases of axillary vessels torn in reducing old shoulder dislocations, of which 15 died. These were in the practice of the best surgeons here and abroad.

Thus J. C. Warren, of Boston (Am. Jour. Med. Sci., XI, 1846), reports large aneurysmal tumor from efforts at reduction. Subclavian tied, with recovery

Blackman, of Cincinnati, had fatal case.

Desault (Jour. de Chir., Vol. IV, p. 301) reports two cases where such efforts caused "tumors aerriennes." Both fatal.

Peletan (Chir. Clin., Vol. II, p. 951) reports two cases. Verdoc (Op. Chir., 1893, p. 559) reports one fatal case. Malgaigne (ed. 1855, p. 150) had a case of axillary artery ruptured in reducing; with recovery. Petet, Dupuytren, Nélaton, and Bell (reported by Hamilton) each had cases.

Delpech (Mem. de Leuxationes, 1827) had artery tear during reduction, and death ensued at once.

Gibson reports two fatal cases, one his own, and one that of David, of Rouen. Another Rouen surgeon, Leudet, had one case. Fatal. (Gibson's Surgery, p. 824.)

Callender (St. Barth. Hosp. Rep., 1866) had one fatal case.

Sir Joseph Lister (Med. Times, Feb., 1876) had one case.

Frorich (quoted by Malgaigne) tore axillary vein in old shoulder dislocation, patient dying in an hour and a half.

Agnew (Phila. Med. Times, Aug. 16, 1873) ruptured the vein in a six-weeks-old dislocation. A large tumor formed over chest. Under compresses, patient recovered. No reduction of dislocation secured.

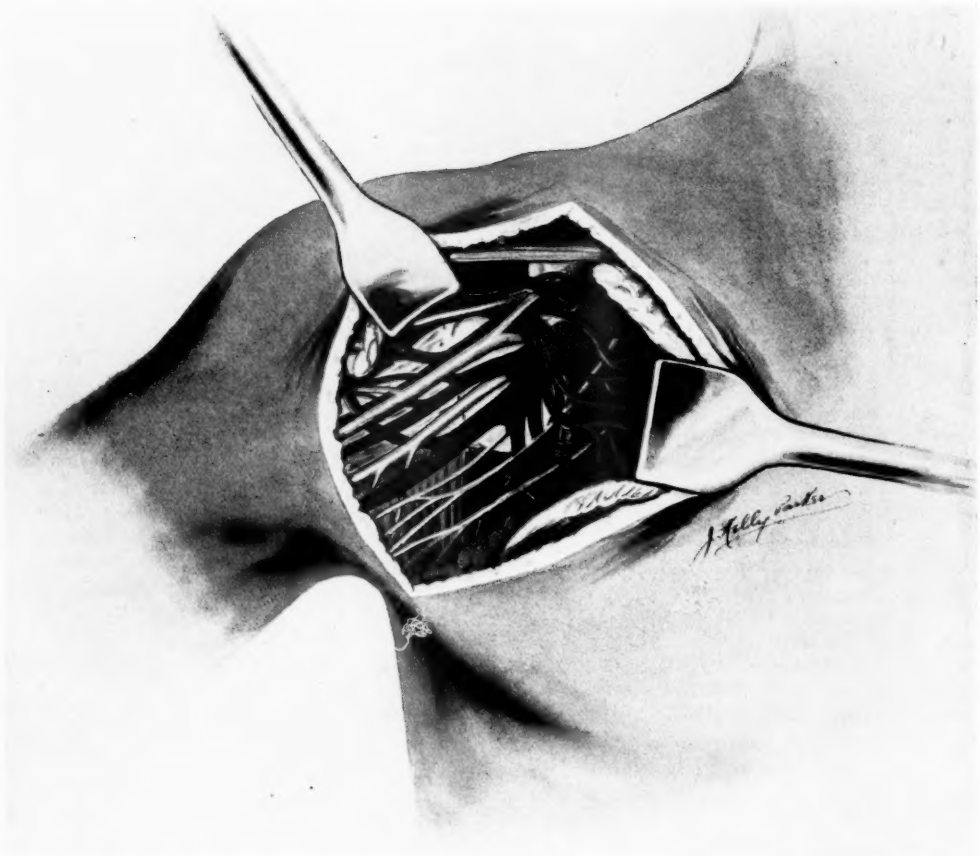


Fig. 1. Author's incision. Pertoralis major divided. Head and tuberosity of humerus in dangerous proximity to great vessels and nerves.

Platner (see Malgaigne's list) ruptured both vein and artery. Sac burst later, with death.

Charles Bell (Phila. Med. Times, 1873) ruptured both vessels and amputation had to be done.

H. B. Sands, in a seven-weeks-old dislocation (Med. Gaz., 1880) had large tumor form in axilla. Recovery followed. No reduction of dislocation.

Lisfranc had a case die of "cerebral congestion" after reduction.

Guerin (see Malgaigne, p. 151) tore the entire arm from trunk in an aged woman in trying to reduce shoulder.

Hutchinson (Lond. Hosp. Rep., VII), and Courtright, of Ohio (Cincinnati Lancet and Observer, Jan., 1877), had cases of sloughing and suppuration following efforts at reduction. Both fatal.

Stephen Smith had one, and Malgaigne four, cases of neck of humerus fracturing in trying to reduce old dislocations. This is particularly dangerous to the vessels.

In all, Hamilton (Fractures and Dislocations, 1884) found:

Axillary artery ruptured	18 cases.
Axillary vein ruptured	2 cases.
Artery and vein	2 cases.
Unknown vessels	2 cases.
Total	24 cases.
Deaths	15 cases.

A St. Bartholomew Hospital case (Lond. Lancet, July 6, 1878) was torn, not only through the vessels, but the axilla was torn open, in efforts at reduction. The tissues were found "in a state of degeneration."

Willard (Phila. Med. Times, Aug. 16, 1876) collates 19 cases, with 12 deaths.

Dupuytren found swelling in axilla after reduction of old shoulder dislocation. This was taken for an abcess and opened. Died of hemorrhage.

R. Adams (Agnew's Surgery) had a similar case; tied the subclavian, and got recovery.

Holmes and Callender each had cases of torn artery.

Stimson brought the number of cases up to 44 of ruptured axillary artery, with a mortality of 70 per cent.

Prochaska, of Vienna, reported an extraordinary instance of damage and displacement of head of humerus. This was thrust between the ribs and held firmly there, displacing pleura. All efforts at reduction failed, and patient lived many years and died from other causes. Specimen now in museum.

Injuries of the brachial plexus are reported by Lecarrey, Lenoir, Malgaigne, and Flaubert. The last mentioned, in trying to reduce an old dislocation, tore out the four roots of the brachial plexus from the spinal cord, causing death in eighteen days.

In recent years, Paget, Körte, and Schoch, and others, have added cases to this series, so that now more than 50 are on record. Of these, 38 were of the axillary artery, according to Körte's summary. The majority of these accidents ended fatally, and most of the remainder suffered amputation.

Very good summaries have appeared in recent years by American and English surgeons, notably those of Willard, Souchon, Keetley, and an especially good report of seven operations by Jonas, of Omaha, who seems to anticipate my idea somewhat by advising some cutting of the pectoralis muscle. Willard's incision is at the pectoro-deltoid line. He also advocated splitting the pectoralis.

Hotchkiss (Ann. Surg., April, 1904) reports two successful cases of operative reduction.

Keetley (Lancet, Jan. 23, 1904) quoted J. Finckh, from Brun's Tübingen Clinic; in all, 100 cases of old, unreduced dislocation. Of these, 23 were left unreduced; of the remainder, two thirds were successfully reduced by operation. Keetley claims the first case of successful arthrotomy in 1890.

Rearink reports a total of 44 cases of the operation by various surgeons.

J. Dollinger, in Budapest ("Anatomische Hindernesse und Meine Methode," Deutsche Zeit. für Chir., LXVI, 319, 1902), treated 19 cases in 5 years; 6 cases were treated by a bloodless method (in 2 of the 6, the head of the bone broke off and remained unreduced); of the remaining 13 cases, 3 had the bone resected. Ten open arthrotomies were performed by Dollinger's method, all successful. The incision is between the deltoid and pectoralis major. Dollinger pulls the pectoralis minor up and the major down. He finds the supra

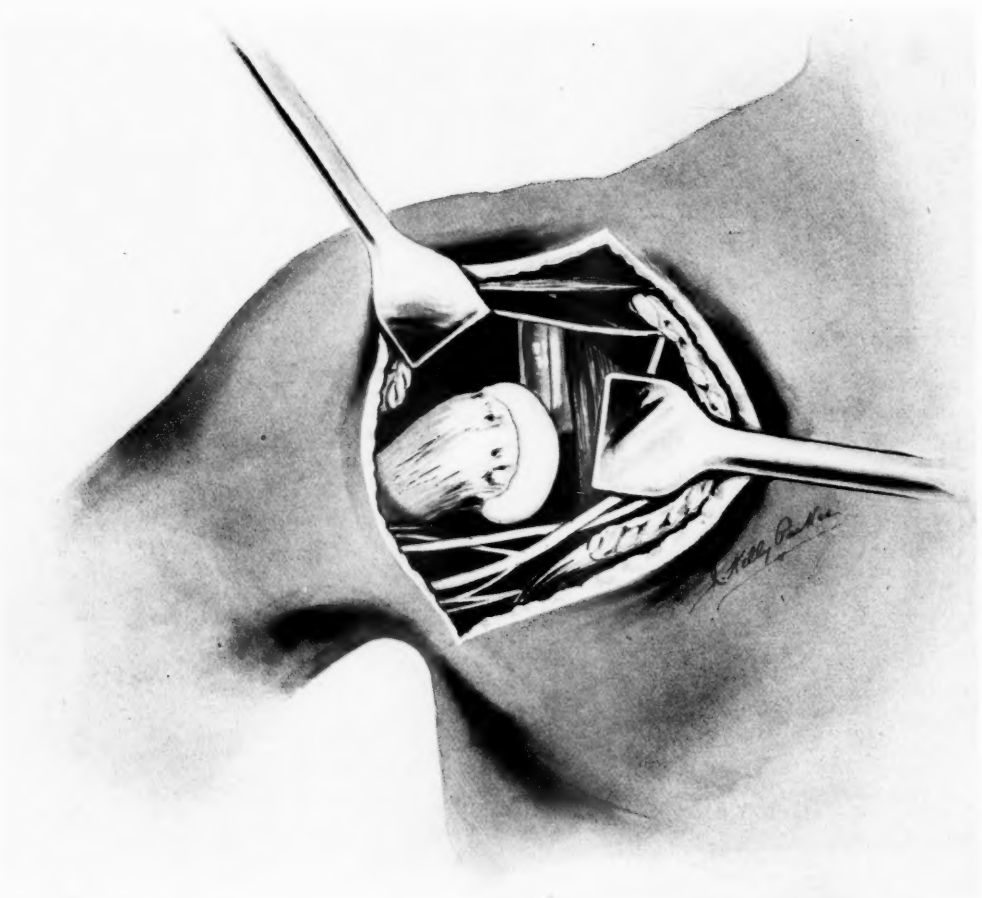


Fig. 2. Nerves and vessels after being released from all adhesions to bone are drawn aside while the reduction is attempted.

and infra spinatus, and teres minor and coracobrachialis in the way, but thinks the subscapularis is the main obstacle to reduction. When he cuts this, reduction by Kocher's rotation is easy, like a recent case. He thinks Kocher and others wrong in believing the altered ligaments most at fault. It is the altered and sclerosed subscapular muscle which he thinks most in the way. My own observation leads me to look upon ligamentous and scar tissue as the chief obstacle, rather than any one muscle. At the time of operation, I have always found the fibrous mass around the head and socket so dense that no one could well determine whether its structure had originally been that of muscle, tendon, or ligament.

It is entirely clear that surgeons are giving up the " bloodless " method, and that few cases of rupture of the vessels will now be heard of. I have never met this accident personally, but am able to add two cases, one from Dr. A. H. Ferguson, who informs me that he was called to see an elderly man, who had earlier sustained a dislocation of the shoulder, upon which efforts at reduction had been attempted. The appearance of a pulsating tumor in the axillary region alarmed the physicians, who were attempting reduction, and Dr. Ferguson was hastily summoned. He found a traumatic aneurysm of the axillary artery, the patient dying in a few moments after his arrival.

A second is from Dr. A. J. Ochsner, who informs me of a case in a clinic of the late Charles T. Parkes. During the efforts at reduction of an old dislocation in the Rush College clinic, the vessels were torn, a sudden hematoma appeared, and the patient died of shock, after ligation of the subclavian.

It may seem strange that a larger percentage of these could not have been saved, inasmuch as ligating the subclavian artery does not, of itself, give a high death rate. We find from Finckh's statistics of Professor Brun's clinic, and other sources, that only three cases of gangrene occurred in ninety ligations of this vessel.

It must be remembered, however, that most of these accidents were unexpected, and that dangerous loss of blood had time to occur before relief could be obtained. We thus see the triumph of " bloodless surgery " in first causing the hemorrhage, and then attempting to cure it by compresses.

These facts are so well known as to be commonplace. Their mere recital is a demonstration that new methods are needed, or that old methods should be abandoned. No careful surgeon now practices or advocates using any but the mildest force in the old shoulder cases, the direct antithesis of what is done in the hip-joint, for there we see an appalling force employed, with no other bad result than occasionally fracturing the bone.

Of course, some old shoulder cases are reducible by manipulation. I have had a four months' case surprise me by slipping into its socket as easily as a recent one. This is exceptional. The majority of cases of ancient shoulder dislocation will fail of reduction by safe bloodless methods, and present the choice of three courses of management: 1. Leaving unreduced; 2. Resecting the joint or head of humerus; 3. Arthrotomy, or reduction by cutting operation.

1. The first, or *laissez faire*, management is suitable to very few of these cases. The majority have such pain or paralysis, from pressure of the head on the brachial plexus, that some interference is demanded.

2. Resecting the head gets rid of this pressure, and is a rational operation. The functional result with a false joint it often surprisingly good. It would be unfair not to mention that this operation has its risks. While usually classed as of less severity than open reduction, it may not really be safer. It certainly does involve more ablation of tissue, but is, of course, a much more simplified and straightforward operation for the man of limited experience to undertake. Yet, even experienced operators do not always find resection easy in old dislocations, because the head is no longer capable of being thrust out through the incision, nor are the capsular ligaments so easy to find and cut. Thus Annandale reported a six weeks' dislocation, with great pressure on the nerves. After efforts at reduction had failed, he cut down and found the head adherent to the axillary artery, which was freed after some trouble. The head was also adherent to the ribs, and was cut away in fragments. The circumflex artery was accidentally torn, and the subclavian had to be

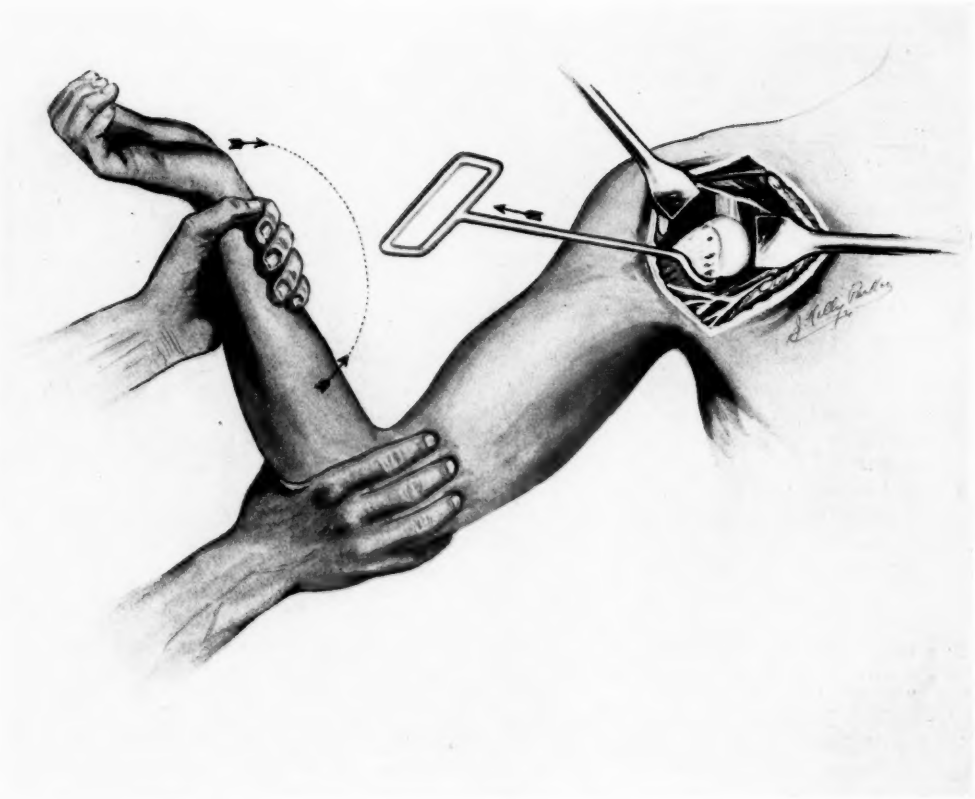


Fig. 3. Reduction by Kocher, or Sweinigen rotation (used to break up adhesions) combined with ordinary traction and manipulation. Use of author's hook on humerus.

ligated, causing gangrene of the arm, and death in three days. (As a substitute for open resection, Dieffenbach, Mollière, and Pollailon advocated subcutaneous section of resisting bands to assist reduction. Probably this belongs to obsolete methods.)

3. We come now to arthrotomy, the ideal replacement of the bone in its socket by open incision. This cannot be said to be an accepted operation in the sense that all authorities commend it. Rather the reverse is true, that most of them ignore or speak guardedly of its merits. Still, Sir J. Lister, Langenbuch, Knapp, Smital, Rearink, Kozlowski, Ollier, Körte, and Schoch early worked out a technic, so that we had it fairly systematized, although no one operator has reported a large series of cases. Later, the work of Dollinger, Keetley, Jonas, Rearink, and others has greatly improved our methods. It still ranks among the difficult and undefined methods, partly from the old dread of opening joints, partly because of the probable entanglement of the great vessels, and partly, I am convinced, because a proper exposure and a large enough field were not obtained by any of the older incisions to do safe and rapid work. Ollier's and Lister's incisions through or near the border of the deltoid give good access to the joint, or would do so if the joint were normal. They are, however, much better adapted to get at the empty socket than the head in its false position. In fact, through such incisions the head must be felt rather than seen, and the vessels detached from it, if adherent, by blunt dissection, partly out of sight. That is, if the head has gone over against the chest wall, the lateral border of the incision can with difficulty be retracted enough to uncover it.

The tissues bleed freely during the stage of loosening the head of the bone from its false adhesions, and I know of no operation where small or badly placed incisions cause more trouble. In four cases in which I used the Ollier incision, the operation took at least one hour, largely because the persistent venous oozing obscured the field, and made it quite difficult to see and detach the great vessels and nerves.

I became satisfied that it was dangerous as well as difficult to deal with the vessels, except with the parts fully exposed to view. My next operation was planned so as to approach the bone from the side of the vessels, rather than from the side of the socket. This involved practically the same conditions found in surgery of the breast tumors. What was obviously needed was wide-open dissection of the axilla by removal of its anterior wall, or in other words, the pectoralis major muscle needed to be cut off from the humerus temporarily. The axilla may be compared to one of the great cavities of the body, in that its important organs can only be studied by laying it wide open.

We have all noticed the free access we gain to the parts when we cut this muscle in the radical breast removal, the coracoid process, humerus, and clavicle, as well as the brachial plexus and great vessels, being amply exposed for a long distance. I know of no operation which so much resembles an anatomical dissection in the extent of structures it lays bare, nor any in which it is so easily done with a few strokes of the knife. When the dislocated humerus takes the anterior and inward position, as nearly all of them do, the head is really in the axilla. Such incisions as Lister's, while just suited to the operation of resection, take no account of the new position of the head. They do, it is true, give greater facility than mine for clearing out the socket and dissecting the capsular ligament, but this is less vitally important than the question of saving the axillary vessels and nerves, which I make the chief aim.

The older incision, also, is more conservative than mine, being made by separating muscular fibers, whereas I cut them transversely and have more trouble in reuniting them. Admitting this, I am sure it is worth the sacrifice, in the ease and safety it confers on all the other steps of the operation.

The vessels once being saved, and drawn away out of danger, the replacing of the bony parts is not so difficult a problem. Some cutting of the capsule, now altered from a tubular process to a flattened band, has been required in all my cases. The rotation methods of Schweiniger and Kocher are so powerful that fibers of any strength, and even the bony parts, can easily be ruptured. (See Dollinger's cases, above.) Combining this rotation, which rapidly loosens the head, with a little cutting of tight

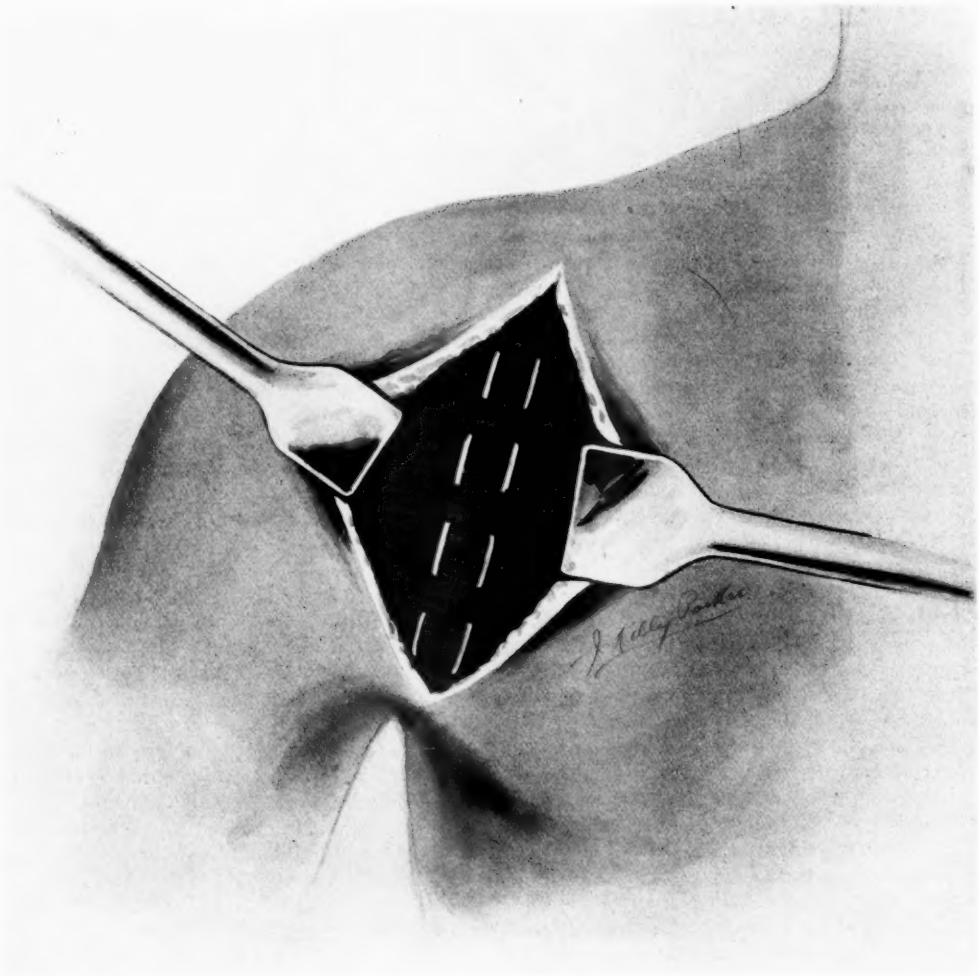


Fig. 4. Bone reduced. Transverse suture of the cut muscle (Harris method). Ready for the skin suture.

bands and manipulation of the scapula, no great trouble or delay occurred in replacing the bone in my last cases. In the earlier ones a great deal of strength was wasted and time lost in too forcible efforts at traction without enough preliminary rotation and cutting of fibers. This is a real mistake. I employed the "Jarvis Adjuster" in one such case, and found it a valuable aid, but not equal to rotation as a means of breaking adhesions.

The steps of this arthrotomy as I now practice it are:

1. Incision from clavicle downward across front of shoulder into axilla. The cut is large,—fifty per cent longer than by the older methods. Never trust a short incision here.

2. Section of the pectoralis major near its insertion, leaving about one centimeter attached to bone. This muscle, being cut transversely, is laid over with the skin-flap, thus exposing the axillary vein and brachial plexus. The pectoralis minor is not cut, unless the head of humerus and vessels have been forced under it.

3. Careful examination of the vessels, if they cross the tuberosity or head of the humerus, is now made. The artery cannot readily be seen, except by drawing aside the vein. On account of this deep position, it is more often involved in the adhesions, and has been the vessel usually torn. Great care and plenty of time are needed to separate these vessels when they or their large branches—e. g., subscapular or circumflex—are found adherent. No efforts at reduction should be made until the vessels and large nerve-trunks are isolated and pulled aside. Bear in mind that some of the reported injuries of the vessels are due to projecting fragments or spicula on the humerus.

4. The forearm should now be flexed on the arm as a lever, and an assistant should rotate, inward and outward, with a rocking motion, and make traction, when the fibers of the adhesions will be seen and heard to tear gradually, so that the range of motion increases. In one case I had Dr. Ridlon to attend to this part of the work. It should be intrusted to some one of experience and judgment in joint-work, as everything depends upon using a sufficient, but not a dangerous, amount of force. The operator, while this is going on, should clear the socket of any granulations and cut and nick such bands as refuse to yield after hard stretching. He should search for the lumen of the shrunken capsule. The head and glenoid cavity soon approach each other, the operator tilting the scapula towards the head of the humerus, and giving directions simultaneously as to flexing, extending, abducting, and rotating the limb, as he sees fit. Here comes in the educated touch of the good assistant, who has set enough shoulders to recognize the indefinable "feel" of the bone finding its way to the socket. The operator should not attempt this part himself, ordinarily. At the last moment the head is apt to take a subglenoid position and refuse to ride over the lower rim of the socket. Before cutting the ligaments or sclerosed muscles more widely, as one is tempted to do, I have found that if a blunt hook or retractor be made to pull the upper end of the humerus straight away from the body, the head can sometimes be dragged over the lip of the socket by a smart pull at the critical turn of the manipulation. I find, also, that Keetley (Lancet, Jan. 23, 1904) advises using hooks on both humerus and scapula. This may be better than merely tilting the shoulder-blade with the hands, but I have not tested it.

Once in place, the bone can usually be held, although the capsular ligament is far from being intact; sometimes, in fact, has lost its identity in a mass of fibrous tissue. As Dollinger well puts it, "The lumen of the capsule is narrowed or obliterated." The arm should now be kept against the body until bandages are on.

5. The pectoralis major, and, if cut, the minor, should now be reunited by the Harris tendon suture method, and the skin closed with separate suture. Drainage should rarely be dispensed with. This operation is invariably a bloody one, if the dislocation is of long standing and the adhesions firm. Good drainage for a few days prevents infection, which can easily take place with large joint surfaces bathed in wound secretion.

Conclusions.

1. It must be considered established that great force is never justifiable in old shoulder dislocations.

2. Few cases can be left unreduced, on account of pain and pressure symptoms on the brachial plexus.

3. Resection is more satisfactory, but not ideal or wholly safe.

4. Arthrotomy by the old incisions is tedious, and never has been widely practiced, but has shown good results.

5. Arthrotomy by the author's method is simplified and made quicker, as well as safer. It would possibly be as safe as resection, and much more ideal in results.

THE INDICATIONS FOR AND METHODS OF ARTIFICIAL DILATATION OF THE CERVIX UTERI

WRITTEN FOR SURGERY, GYNECOLOGY AND OBSTETRICS

By LUDWIG KNAPP
k. k. a. o. Universitäts Professor, Prague

Translated by CAREY CULBERTSON, M. D.
Instructor in Obstetrics, Rush Medical College

PART I

THE question which excited the height of interest and which was most widely discussed at this year's meeting of the German Gynecologic Society—the subject of the obstetrical symposium—was that of the artificial dilatation of the cervix uteri for the purpose of exposing the uterine cavity. A generally accepted decision in regard to the instrumental dilatation of the external os, or rather of the cervix of the pregnant uterus, according to Bossi, was hardly to be expected in view of the different opinions which have been expressed in the extensive literature already published on this subject. And yet, various well-known authorities, notably Leopold and Olshausen, have recognized the usefulness and the propriety of Bossi's method, even for practice in the policlinic. Particularly, Bumm, who has rather favored cervical incisions and the vaginal Cæsarean section of Dührssen, acknowledges that Bossi's method is permissible, when he says:

"If the cervix is effaced, dilatation according to Bossi, may be carried out without danger, incisions being then unnecessary; if the cervix is not effaced, then the incisions are in order, preferably the anterior incision, the bladder having been first lifted up."

While the indications for the artificial dilatation of the cervix are to be considered first in a general way, it is my purpose subsequently to take up in detail Bossi's method of accomplishing *accouchment forcé*.

The indications for opening into the uterine cavity are: 1. Exploration for diagnosis, as it is employed in the gynecological field; and 2. Therapeutic reasons, such as are found in the practice of obstetrics. In both, the purpose is to carry out those interventions which presuppose the accessibility of the uterine cavity, the various methods employed depending upon this accessibility. In this paper, intended as a general review for presentation before colleagues, it were superfluous to consider these indications in detail, taking it for granted, also, that the various methods of cervical dilatation and the proper technic is generally understood.

The gynecological portion of our subject is exhausted with the mention of tupelo tents, laminaria, or solid metal, hard rubber, or glass bougies as a means for dilating the cervix. Hence, we turn at once to the methods for opening into the uterus in pregnancy, in labor, or in the puerperium. The indications for such intervention are found, for example, in the need of inducing or terminating abortion, premature labor, or labor at term, and, most of all, in the removal of retained membranes during the puerperium.

For induction of labor, the first method worthy to be mentioned as adequate is the tamponade of the vagina and cervix with gauze saturated in sterile glycerin. This method is comparatively harmless, but it is not always sufficiently prompt, acting chiefly by stimulating uterine contractions. Practically, it

might be classed with the previously mentioned tents and bougies as a means of dilatation, the tamponade in the cervix having, in part, a mechanical action. Indeed, laminaria tents and solid bougies are used in obstetrical cases, especially in abortions, where it is necessary to secure speedy results, and here, in certain cases, sufficient enlargement of the cervix may be obtained to permit the removal of the fetus or the retained membranes by means of the finger or the curette. Even where pregnancy is considerably advanced, tamponade of the cervix and vagina may be used with good effect as a method preliminary to other procedures. It should be observed, in regard to an essential point of our question, that, occasionally, severe injuries may occur even by this simple and frequently used method of opening into the uterine cavity. These are equally apt to occur, however, in the forcible digital dilatation of the cervix.

The bougie is frequently used for the induction of premature labor, standing as a method by itself for this purpose, since, in women at term, the cervical canal is usually patent, a condition essential to the successful passage of the instrument. Unavoidable rupture of the oval sac not infrequently occurs on attempting to pass the bougie, an accident not followed by rapid progress, and which therefore increases the chance of infection. The severe infections, even tetanus, which formerly occurred following the use of the conventional rubber bougies may be avoided by adopting an aseptic metal one [1] such as I had made a few years ago in the shape of a metal spiral.

Should it become necessary by the thirty-sixth week to induce labor artificially, to hasten it or to end it in the sense of an *accouchment forcé*, we consider first the indications. For example, we have marked heart or lung disorders, or other severe diseases of the mother, particularly eclampsia. Or there arise certain complications of labor, as hemorrhage, relative disproportion between the pelvis and the fetal head, anomalies of the pains (weak pains on the one hand, on the other, spastic stricture of the os). There may be a pre-existing puerperal infection, or a cicatricial stenosis of the cervix, not too marked. Finally, an indication may come from the child, conditions threatening its life, as, for instance, prolapse of the cord, demanding a rapid termination of the labor. With such indications, only such methods come into consideration as make it possible to open and empty the uterine cavity in the short space of time which the obstetrician has available.

If we do not take into account colpeurysis, we then think of effecting dilatation by means of the Barnes bag or by metreurysis combined with continued traction by weight extension. This forms a process directly attacking the cervix. Where the strictest asepsis is possible, such a method may be safely recommended to the practitioner dependent upon his own resources, since a successful termination within the necessary time will be secured in a large proportion of cases. As is well known, the colpeurynter and metreurynter play important roles as well, in the treatment of placenta prævia. Lacerations of the cervix, even deep injuries, have been observed in the use of these bags. Much oftener, however, are tears the result of manual dilatation of the os, especially if the method is practiced too roughly or too rapidly. Manual dilatation differs, too, in that anesthesia seems to be absolutely necessary. Again, since perfect asepsis of the hand cannot be realized, unless the operator is accustomed to work with sterile rubber gloves, the danger of infection is not far distant.

An old method of dilating the cervix, and one which has again come into favor, is that of bringing down one foot of the fetus, either by simple traction in breech-presentation, or by version for this special purpose. This method has the advantage of acting both mechanically and by initiating uterine contractions, and has been chiefly indicated in placenta prævia. Experience has shown that the best interests of the mother, which must always be first considered, are well guarded by this method of artificial aid. Let us bear this well in mind. Yet, however clearly a forcible dilatation of the cervix may be indicated in the case of premature detachment of the normally implanted placenta, where there is already a dangerous hemorrhage, such a course generally would be of correspondingly little avail in placenta prævia. In such situations, the vaginal Cæsarean section is to be reserved for the ablest operators only; for, before

[1] Ein aseptische Bougie für Einleitung die Frühgeburt. Wiener klin. Wochenschrift, 1900, No. 50. Knapp.

obstetrical interventions may be deemed a common possession of the practitioner, he must be most vigorously trained in technic, to accord with the modern teaching that all obstetrical operations are to be carried out along strictly surgical lines. This is true even of the seemingly much less important cervical incisions, following which there may be further tearing of the incisions, producing severe injuries with uncontrollable hemorrhage.

Hence it is that there is nothing new in the idea of widening the cervical canal in a bloodless manner by means of some sort of a blunt, powerful dilating apparatus. At the meeting of the Natural History Society held in Karlsbad, I made reference[1] to some historical data relative to this subject. Bossi's must be the honor of having methodically worked out the instrumental dilatation of the cervix, of having tested his method in a large number of cases, and of having constructed a useful instrument for this purpose. In Germany, Leopold's influence first incited particular and extensive interest in this question. Personally, I may claim the fact that even before Leopold's publication, Bossi's method had been used in a number of appropriate cases in my clinic, and was first described in detail in my text-book.[2]

It is not within the province of this paper to go further into the extensive literature on this subject. Suffice it to say that this has been collected by myself up to the winter semester of 1902; for the subsequent literature I refer to Montuoro's "Studio comparativo fra il taglio cesaro ed il parto forzato in rapporto alle loro indicazioni." The study of this thesis has also been urgently recommended by Leopold. For a description of Bossi's original instrument, I cite the following from my text-book, to which reference has just been made:

"Bossi's dilator consists essentially of three (later, four) long metal arms, which at their free ends have bayonet-shaped extensions, the real dilating portion, with a screw for fixing the arms. The latter, while closed, are inserted through the external os into the cervical canal, and are then gradually spread by turning the screw to the right. An indicator attached to the left side of the instrument makes it possible at all times to ascertain in cm. the degree of dilatation reached.

"If the opening of the cervix has advanced to two fingerbreadths, the instrument may be removed and enlargement continued by means of rubber bags. If, however, it were dangerous to temporize, the instrument is again introduced after the arms have been capped with metal covers, thus bringing broader surfaces into play for further dilatation. By gradually increasing the spread of the apparatus, complete dilatation of the cervix may be accomplished in an emergency within a half-hour. While dilating, it is absolutely necessary to pause from time to time, the instrument being held in place by means of a bandage."

The reports from others concerning injuries resulting from the use of Bossi's dilator, as well as my own personal experience with it, led me to adopt several essential modifications of the instrument, designed to decrease this danger. Such a modified apparatus was demonstrated in Karlsbad in 1902, and again, with several further improvements, two years ago, before the Gynecological meeting at Würzburg. For the complete description of this instrument I reserve a special article.

My own position in respect to this question of cervical dilatation, I have expressed elsewhere,[3] but, in general, it may be here stated that the method is to be recommended in cases of emergency as follows:

1. To dilate the cervical canal as a preliminary to digital or instrumental curettage of the uterus in abortion.

2. To secure sufficient enlargement for the introduction of a metreurynter where it were better not to complete dilatation with the dilator itself.

3. To enlarge the cervix for the purpose of performing combined podalic version, particularly when extraction is to follow immediately.

4. As a procedure preliminary to operations for delivery (forceps, manual extraction, craniotomy, embryotomy, etc.), where the narrow condition of the external os does not permit, or renders essentially difficult, the desired maneuver.

[1] Zur frage des Accouchment forcé durch instrumentelle Ausschliessung des Müttermundes. Wiener klin. therapeut. Wochenschrift, 1902, Nos. 41' 42, Knapp.

[2] Geburtshilflichen Diatetik und Therapie Knapp A. Wiener's Verlag, Leipzig, 1902.

[3] Verhandlungen der deutschen Gesellschaft für Gynäkologie. Bd x, p. 514, f.

5. To open the completely closed or more or less dilated os in *accouchment forcé*, as in the artificial induction of premature labor or at term; i. e., in eclampsia, and, under certain circumstances, *in agone*, or even *post mortem*.

6. To dilate the os where it is abnormally rigid, and to induce contraction in such cases.

In addition, there are other especial indications: the necessity of quickly terminating labor in cases of premature separation of the placenta (but never in placenta prævia); the interruption of a "missed labor" (retention of the dead fetus); and finally, the retention of membranes, and consequent puerperal fever, the cervical canal being in a condition of marked contraction. In cases of extensive cicatricial or carcinomatous stenosis, forcible use of the dilator is not advised. There are those, too, who advocate combining dilatation of the cervix with pubiotomy in cases of contracted pelvis.

Undoubtedly, as a matter of fact, cases do occasionally occur where an unfavorable condition of the soft parts, especially of the os, render success doubtful if proper help is not given, even after difficulties offered by the bony pelvis have been fortunately overcome. Here, under certain circumstances, the dilator would have a place, since labor is terminated by the forceps after the symphysis is separated, just as Bossi recommends for his method in general. But if we totally disregard Bossi's method, we nevertheless observe that the results of Gigli's pubiotomy, as recently performed by von Franque for the first time in Austria, have been excellent.

As dangers contra-indicating forcible dilatation, we have the following:

1. The possibility of causing severe laceration of the cervix and of injuring even the lower uterine segment.

2. The incomplete effect of the method, in that it may fully stretch the cervical canal without securing effacement.

Finally, it must be mentioned that it may become difficult, if not impossible, to pass the dilator when the head is low down and fixed. To prevent the undesirable closing of the os after removal of the instrument, Ehrlich has suggested the introduction at once of a metreurynter. We thus have dilatation effected by means of the instrument and bag combined, as is elsewhere recommended, except that the order is reversed; that is, where the cervix remains intact, metreurysis is first employed, to be followed by the Bossi as necessity arises.

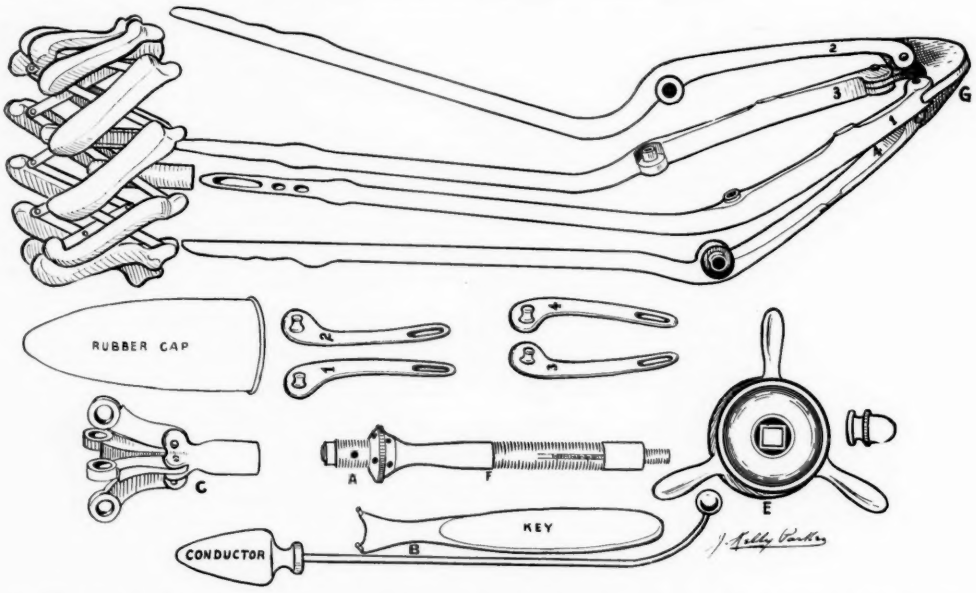
As regards the possibility of causing more or less injury at the cervix, Bossi's method partakes of this danger, equally with all forcible methods of delivery. And just here is the main point of attack, taken advantage of with so much justice by the sufficiently numerous antagonists of instrumental dilatation of the os. It is agreed that one of the most painful situations in private obstetrical practice is hemorrhage from a cervical tear, the control of which is a most difficult task. Such an occurrence must be granted as possible with Bossi's method After one such experience in my own clinic, where a hemorrhage from a deep cervical laceration caused by Bossi's dilator was controlled only with difficulty, I declared that instrumental dilatation of the cervix was permissible upon condition only that the technic be under absolute control. The operation must be done with an instrument that works as lightly as possible, and injuries must be avoided in the subsequent delivery with every care. Against the occurrence of lacerations, one must be ever on guard, and should certainly have the necessary preparation and training for this treatment.

THE TECHNIC OF INSTRUMENTAL DILATATION OF THE CERVIX ACCORDING TO BOSSI

PART II

DURING an entire decade in Germany, Bossi's method had remained unnoticed and his dilator unknown. Now, however, having become, as it were, the fashion, the question of instrumental dilatation of the os uteri excites the keenest interest. At present, casuistic contributions are pouring in from all sides, numerous experiences for and against are being recited, and there is no lack of instruments produced

as "improvements" of Bossi's original one. Indeed, perhaps many of these modifications may have seen the light of day before their inventors had become properly acquainted with the original instrument. To enumerate were unnecessary, since there can be no important fundamental improvement in increasing the number of arms to six or eight, instead of the four branches of the most recent Bossi model. Contrary to de Seigneux, I can see no reason for changing the general construction of the instrument, since, in accordance with the requirements of asepsis, it may be completely, yet simply, taken apart. The most noteworthy modification is that of the dilating portion, such as has been constructed in Vienna after my own specifications. By means of a bracelet-like jointed ring, this instrument secures dilatation from moderate degrees up to complete opening of the cervix.



After enlarging up to a diameter of three fingerbreadths, the dilator is introduced closed, with the aid of a specially designed "conductor," if necessary, and is capable of effecting complete circular dilatation. Provided this apparatus is manipulated with the extreme care demanded in the use of all such instruments, the danger of severe injuries from overstretching, and of the more serious contusions or lacerations directly due to the branches, has been reduced to a minimum. In addition, the soft tissues may be protected from direct contact with the metal portions of the instrument by drawing over the jointed ring a protective rubber cap. To secure enlargement sufficient to admit this apparatus, dilatation is first effected by means of four branches constructed similarly to those of the original Bossi instrument. A detailed description, previously published,[1] is here rendered unnecessary by the accompanying illustrations.

The disarticulation of the apparatus is simple, and is done as follows:

First, the cross-head screws *A* of the dilating part is loosened with the forked key *B* by turning it to the left. At each of the parts, 1, 2, 3, and 4, there is a crank; when these are moved outward, through a quarter-circle, the four long dilator-arms, fall apart, whereupon the cross-head nut *C* is freed and may then be unscrewed.

Finally, the screw-nut *D* is unscrewed from

[1] Zentralblatt für Gynäkologie, No. 7, 1902, u. No. 11, 1903. Illustr. Monatsschrift der ärztliche Polytechnik, Juli, 1903.

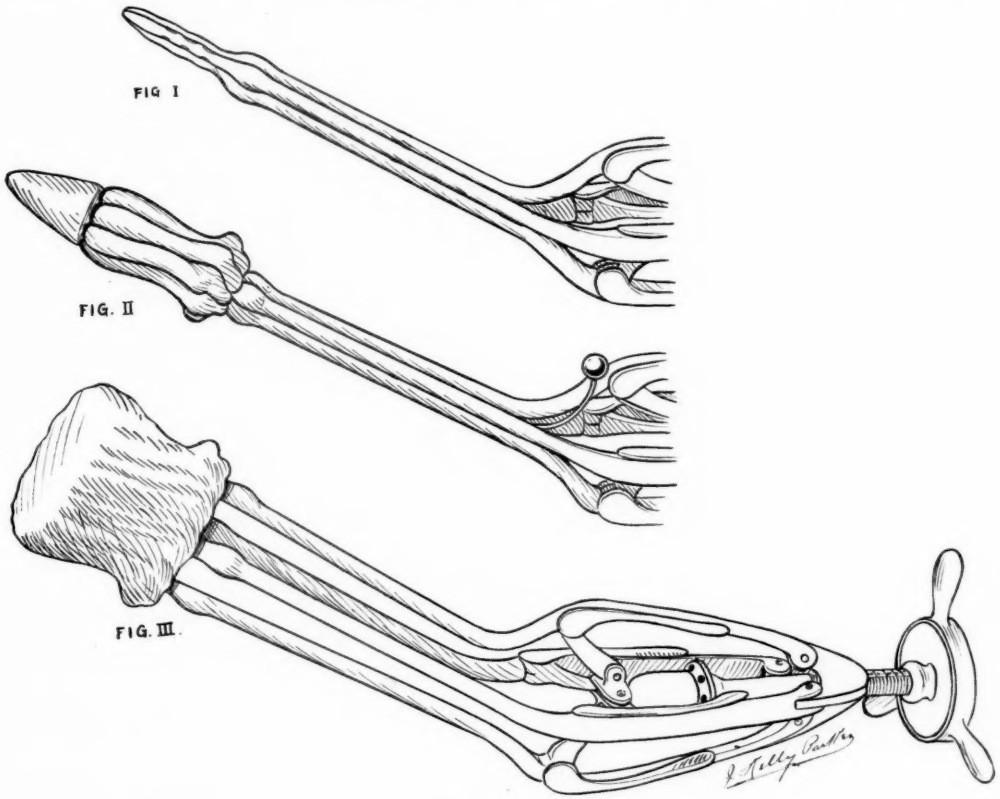
the driving-wheel *E*, the wheel is removed from the pinion, and the spindle-screw *F* is loosened.

Reconstruction is also simple, as follows:

The spindle-screw *F* is brought into the thread *G*, the wheel *E* placed on its pinion, the nut *D* is drawn tight, and the cross-head nut *C* is screwed on the thread *A*. Each branch is numbered 1–4, these numbers corresponding with

With the exception of the driving-wheel, the instrument is made in all its parts of the best hand-wrought steel.

The dilator, as thus modified, is considered by de Seigneux [2] to be the one which combines all imaginable advantages while retaining the principles of construction of the original Bossi instrument. It should be noticed, however,



One-half natural size.

Fig. I. Dilator closed.
Fig. II. Dilator with conductor and jointed ring for the partially dilated cervix.
Fig. III. Dilator with jointed ring and rubber cap for a dilatation of 6. cm.

like numbers on the cross-head nut *C* and on the four cranks.

Lastly, with the forked key *B* a turn towards the right is given the cross-head screw *A*, thus drawing it tight. In the cross-head screw *A* is a a hole for oiling, where, from time to time, sterile glycerin, or some such lubricant, is to be used.

that the principle of construction, as may be seen from the illustrations, has been considerably modified, with the idea of conforming more closely to the laws of asepsis. If de Seigneux himself, or, after him, countless others followed their various ways in order to reach the

[2] Archiv. für Gynäkologie, bd. i, 70, f. 3.

same goal, surely each one undertook the task for the purpose of producing something better.

It is impossible that one should be able, personally, to acquire experience in the use of the various instruments. They vary in principle only slightly from the original of Bossi, though, in method of application, the differences are undoubtedly more appreciable. The instrument ment just described differs from all others chiefly in the attachment of the bracelet-like jointed ring, whereby complete circular dilatation of the cervix is secured. For the lesser degrees of enlargement, the four branches, alone, cone-shaped, when apposed, are utilized; and they may also be covered with a single rubber protective cap.

As regards the application of the instrument, it remains merely to say that in the clinic, and up to the present time there only, I have applied it to women in labor, after placing them on the operating-table in the lithotomy position. The necessary disinfection having been accomplished and the vaginal speculum passed, the cervix is not drawn down, but the instrument is introduced under the direction of the eye or finger. The branches are either closed or more or less opened, according to the condition of the cervix already existing.

When the dilator is in proper position, its arms are slowly spread by turns of the screw quarter-way around until the desired degree of dilatation is reached. Between turns there must be a pause up to two minutes or more, according to the resistance of the tissues, so as to keep the instrument under constant control and guard against possiple injuries.

It is important that one go somewhat beyond the absolutely necessary degree of dilatation since the forcibly dilated os will retract, sometimes very considerably, at once after the dilator has been removed. This fact enters seriously in all cases when delivery is undertaken.

With all others who have had opportunity to familiarize themselves with the method, I advise caution and patience. In favorable cases it may be possible to end labor in a very short time, but it is never required, as I have previously observed, that one establish a record.

With respect to the general indications for the use of the dilator, I have had opportunity for speaking previously in these pages, as well as on other occasions. For myself, these are strict indications from which there can be no departure. Therefore, even from the "humanitarian" viewpoint, so warmly defended by de Seigneux, I could in no case resort to Bossi's method for the mere purpose of shortening a protracted first stage of labor, where there were present no other indications than the desire of the parturient, and not unnatural wish of the accoucheur, to shorten what so often becomes a most tedious trial of endurance.

In my opinion, the forcible dilatation of the cervix, like all other forms of *accouchment forcé*, must be reserved for the most pressing necessity, when the dangers, carefully weighed against the circumstances giving rise to such intervention, must be taken into consideration.

THE SURGICAL PATHOLOGY OF ONE HUNDRED MAMMARY TUMORS [1]

By WILLARD J. STONE, B.Sc., M.D.
TOLEDO, OHIO

I WISH, before taking up the subject of this paper, to refer to certain work done during the past year or two, and now in progress, by Jensen, of Copenhagen (*Centralblatt für Bacteriologie*, abt. 1, vol. xxxiv), and in this country by Gaylord, Clowes, and Baeslack (*Medical News*, Jan. 14, 1905), concerning the etiology of malignant growths in general, and also to refer to the work of G. N. Calkins (*Fifth Annual Report, Gratwick Research Laboratory, University of Buffalo*, 1903-04).

Jensen has been working with white mice infected with adeno-carcinoma, and through his courtesy Gaylord, Clowes, and Baeslack have been able to carry on the work in this country with mice received from him. They have been able to inoculate successfully other white mice; the percentage of "takes" in sus-

[1] Read before Ohio State Medical Association, Columbus, Ohio, May 12, 1905

ceptible mice varying from twenty to seventy per cent. Some of these tumors, after reaching demonstrable size, ceased growing, and underwent a from of retrogression; i. e., the tumor disappeared and did not recur. The blood serum of these spontaneously cured mice, when injected into other mice with actively growing tumors, possessed the power of inhibiting the growth of the larger tumors, with disappearance of the smaller ones, and leaving the animal possessed of an immunity preventing recurrence of the growth. The tumors in the control mice usually caused death in from three to four weeks, while up to the time of report not a single mouse treated with the immune serum had died.

This work upon the production of immunity is very promising, and these workers are very hopeful that it may lead to a practical solution of the question of the curability of cancer in the human being.

Calkins has concerned himself with the study of the various cell inclusions found in cancer, with reference to them as degenerative products of the cytoplasm, as nuclear products, and as to their possible parasitic nature. He has found that the X body of Behla (*Die Pflanzen parasitäre Ursache des Krebses u. die Krebs prophylaxe*. Berlin, 1903) is not to be satisfactorily explained as protoplasmic, degenerative, or secretive product, although it is not yet known to be independent of blood-cell origin. In some cases it shows strong evidence of spontaneous movement. Its possible parasitic nature is yet undetermined.

So far as my subject is concerned,[1] I shall not bore you with detailed descriptions leading up to the classification of this series of one hundred tumors, only where such descriptions bring out points requiring emphasis. The question of diagnosis microscopically is a very important one, but until recently much confusion has arisen from apparent misconceptions of the various phases of the same process; i. e, as to the changes speaking for early malignancy.

The interest in the subject of mammary tumors hinges upon the following points:

I. The question of what constitutes the ordinarily considered benign changes in the gland; i. e.,

a. Chronic lobular interstitial mastitis;

b. Pure fibroma, and adeno fibroma;

c. Breast angioma;

d. Simple serous cysts due to blocking of the ducts or milk-cyst engorgements.

II. Those changes in the gland in which a safe diagnosis is possible only under the microscope. I wish, under this head, to bring out certain facts from the standpoint of pathology, which, though well known, have not been sufficiently appreciated by those who are first called upon to make the diagnosis clinically,—the general family physician. I refer to the question of active atypical cell proliferation in tumors usually considered benign; in other words, to malignant transformation or degeneration of so-called benign growths.

I. *Under the first heading*,—benign changes and tumefactions in the gland.

Chronic Interstitial Mastitis.—This refers to a deposit of newly formed fibrous tissue around the ducts, a condition which occurs especially in large, pendulous breasts, and may be associated at times, in nervous women, with uterine disturbance, or at the climacteric. The breast may be enlarged and tender. When the induration seems to be localized, involving but a few deeply seated lobules, if the gland is flattened against the ribs with the whole hand, the induration usually will disappear. McGraw (1), in a recent article, speaks of certain general enlargements with induration in which the whole gland becomes caked and hard. The difficulty in diagnosis may be great, especially when there is apparent retraction of the nipple, a condition which, in some women, has always existed. The skin is not adherent, however, and the axillary or supraclavicular glands not, as a rule, enlarged.

So far as the glands are concerned, negative findings in thin women have certain value. Positively enlarged glands may mean much or little in early diagnosis.

Virchow (quoted by McGraw) has spoken of some of these cases of chronic interstitial mastitis as giving the microscopic picture of a diffused fibroma, newly formed fibrous tissue around the ducts, and the alveolar spaces filled with epithelial cells.

[1] Some of these tumors were obtained while working in the Pathological Laboratory, University of Michigan, in 1900, some from private cases, others from the Pathological Institute, Vienna, 1903, and from the Klinik of Dr. Senn, Chicago, 1904.

To distinguish between these clinically benign forms and those ordinarily considered benign,— i. e., adeno-fibromata,— but which, in the light of present knowledge, leaves much room for doubt, is difficult. Certain adeno-fibroma with evidences of active epithelial cell proliferation will be referred to later as one of the essential points of this paper.

Angioma of the breast is comparatively rare. Malaport and Beauchant (2) have recently reviewed thirteen cases. They are more common in childhood. There was no recurrence after ablation of the breast.

Mammary cysts are much more common. Some of the statistics show marked variation, however: Bloodgood (3) Johns Hopkins, 7 per cent of 510 breast cases; and Abbe (4), 42 per cent of 97 breast cases.

Simple cysts, serous or milk-retention cysts, are readily diagnosed by the exploratory needle, under aseptic precautions, of course. A single evacuation together with massage usually suffices to cure. These cases should be kept under observation for some time, however, since malignant transformation may occur. Greenough and Hartwell (5) have reported a study of thirty cases of chronic cystic mastitis, out of which three, while clinically and microscopically indistinguishable from the others, showed microscopic evidence of cancer, while all showed adenomotous proliferation of the cyst-lining, suggestive of beginning adeno-carcinoma. A transition to adeno-carcinoma certainly occurs in a limited number of cases of chronic cystic mastitis. G. A. Ellis (6) reports a case of cystic degeneration of mamma, showing transformation into scirrhus carcinoma. This cystic breast case showed distinct histologic evidences of having become scirrhus carcinoma.

II. *Under the second heading*,—the class of true neoplasms. This series of one hundred tumors is classified as follows, according to the usual pathologic alterations of structure:

	Per Cent.
Carcinoma simplex	23
Medullary carcinoma	14
Scirrhus carcinoma	16
Carcinoma simplex et medullare	7
Carcinoma colloides	2
Adeno-carcinoma	17
Total carcinomata	79
Sarcomata	5
Adeno-fibromata (4 of which show evidence of beginning carcinoma)	15
Tuberculosis of the breast	1

Eighty-four per cent of the series are malignant; if the four adeno-fibromata which show evidence of beginning carcinoma are added, the malignancy is 88 per cent.

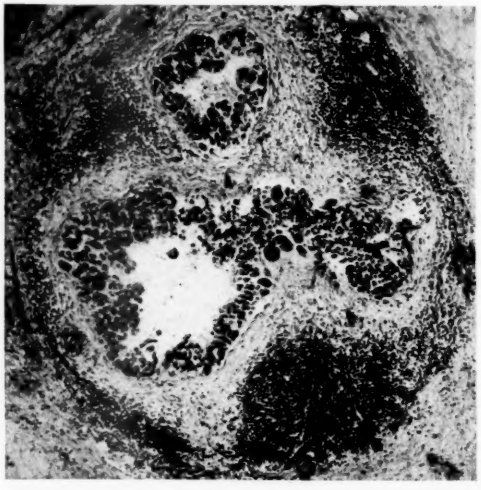


Fig. 1. Carcinoma simplex, (No. 26) epithelioid and giant cells with areas of Caseation (Tuberculosis).

The following 4,508 cases show an average malignancy of 84.9 per cent:

	Cases	Per Cent Malignant
Hyde .... (7)	80	82
Gross .... (8)	637	83.2
Bryant ...(10)	481	83.16
Billroth ..(11)	440	85
Senn .....(12)	440	95
Williams .(13)	2,430	81
	4,508	84.9

Seventy-nine per cent of the series were diagnosed carcinoma following the definition of an epithelial tumor, the cells of which grow insanely in connective tissue spaces, growing by infiltration of surrounding structures, rather than by expansion, and by metastasis.

Twenty-three of the seventy-nine were carcinoma simplex, the cells and stroma being

relatively equal. Myxomatous, fatty degeneration, and necrosis was quite common in some sections. The arrangement of the cell-columns varied, as did also the connective tissue matrix. The blood-supply of the latter was in inverse ratio to the age of the fibrous tissue; the older the fibrous tissue, the fewer the number of blood-vessels in it. Some of the tumors showed dilated gland spaces with well-defined cell-nests. Muscle infiltration was met with frequently; calcification in one specimen. One tumor (Fig. I) showed tuberculous nodules (epitheloid and giant cells without blood-vessels), with caseation in certain areas, together with round cell infiltration. A few small abcess cavities were found in the tumor mass. This co-existence of tuberculosis and carcinoma in the same gland is certainly not common.

Fourteen of the cases were diagnosed medullary carcinoma, the stroma being small in amount. These tumors have a soft consistency, and because of the preponderance of loose cellular elements are more apt to form metastases. The cells infiltrate the muscle, the fat, the lymph spaces, and skin. One specimen shows the reality of hematogenitic metastasis. The carcinoma cells have invaded the walls of a comparatively large vessel, and were to be found within the lumen among the red-blood cells. (Fig. II.) The gland ducts and spaces were present in a few instances. One specimen shows the transition of an adeno-fibroma to that of medullary carcinoma in other parts of the gland.

Seven of the series were diagnosed as carcinoma simplex et medullare, certain areas showing the characteristics of both. (Fig. III.)

Sixteen of the specimens were found to be *scirrhus carcinoma*. Myxomatous degeneration was found in practically all. Dilated gland spaces with cancerous proliferation of the cells forming the walls of the spaces (alveolar arrangement) was not uncommon. Infiltration of muscle and fat was not as common as in the simplex and medullary forms. The density of the stroma with its poor blood-supply undoubtedly limits the rapidity of the growth of the cellular elements, the elements making metastases possible. This accounts for the slow-growing character of this variety of carcinoma.

Of the seventeen coming under the head of *adeno-carcinoma*, three were adeno-cysto-carcinoma, five were adeno-fibro-carcinoma, while nine were simple adeno-carcinoma. The glands and ducts in some of these cases could not be told from normal gland structure, while, again in the same specimen dilated gland spaces and ducts showed distinct epithelial cell proliferation with the formation of cancer-nests and new fibrous tissue. This fibrous tissue stroma contained well-stained nuclei, and never appeared to be of the scar tissue type seen in scirrhus. The cell columns or nests were seldom so well defined as in the simplex form, although in one case, in certain areas, because of a more or less equal distribution of stroma and nests, the transition of adeno-carcinoma to the simplex form is probable. Two cases of adeno-fibro-carcinoma (Fig. IV and Fig. V) showed distinct transition from adeno-fibroma. One was an intracanalicular form with tongue-like ingrowths of fibrous tissue in the dilated gland spaces, together with marked epithelial cell proliferation. Myxomatous degeneration was met with in three cases.

Two cases were diagnosed *carcinoma colloides*. This term, signifying mucous degeneration of the cellular elements, should be discarded, since the mucous changes in the cell is myxomatous,

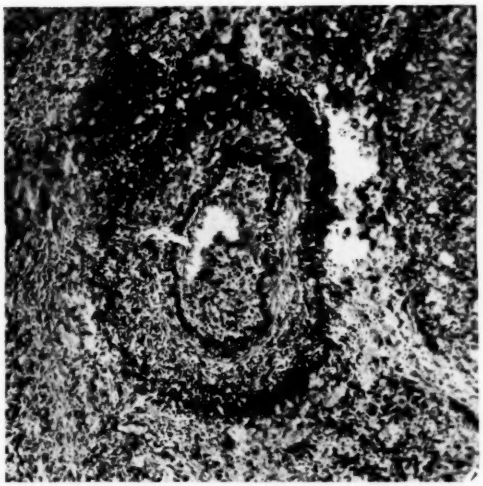


Fig. 2. Medullary Carcinoma (No. 21). Carcinoma cells in lumen of comparatively large blood-vessel (hematogenitic metastasis).

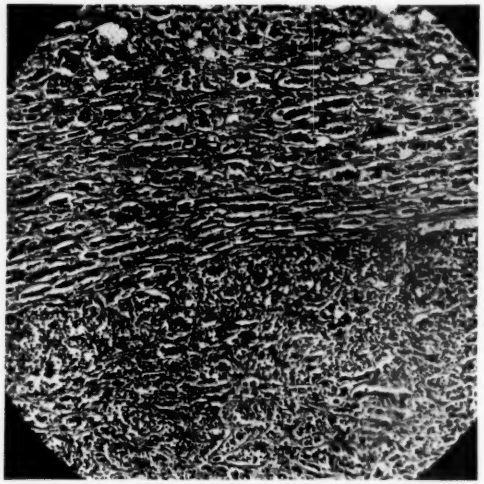


Fig. 3. Carcinoma Simplex et Medullare (No. 81). The upper half of carcinoma simplex conformation; the lower of carcinoma medullare.

resembling colloid, but not colloid. Myxomatous degeneration of the stroma was commonly present also. The qualifying adjective used in this sense to characterize a growth should, in reality, not enter into the compound name describing it. The compound name should describe the new tissue conformation and elements only. It would be much more correct to speak of a tumor as carcinoma with fatty degeneration, or carcinoma with myxomatous degeneration.

Five of the hundred cases were *sarcomata*. One was a large spindle-cell sarcoma in the male breast. Sarcoma or carcinoma are relatively very infrequent in the male breast. Balloch (14) has recently reported a cancer and Bell(15) a scirrhus carcinoma in the male breast. One specimen was a polymorphous cell melanotic sarcoma arising in the pigment cells of the areola of the nipple. (Fig. VI.) In two others (Fig. VII) the thin-walled blood spaces in contact with the sarcoma cells were broken down, and these cells could be seen in the lumen of the blood spaces among the red-blood elements, the hematogenitic metastasis common to sarcomata. (Fig. VIII.) Glandular structure was absent in all these cases, except in one, where glandular remains were found near the periphery of the growth. As Hyde says, "Sarcoma, apparently, does not grow between the ducts to any extent, but destroys them during the progress of its infiltration growth."

Tuberculosis of the gland was found in one case, and in another co-existed with carcinoma, as previously described. (See Fig. 1.)

In the series there were fifteen *fibromata*. In these tumors the adenomatous structures of the gland were more or less preserved, except in so far as the growth of the fibrous tissue tended to obliterate the gland spaces. In four of these tumors, evidence of beginning carcinoma was present. In two simple adeno-fibroma, the larger gland spaces were filled with masses of epithelial cells without basement membrane, and infiltrating the surrounding tissue (Fig. IX), while in two of the four adeno-cysto-fibromata this epithelial proliferation was evident in the cells lining these small cysto-walls. (Fig. X.) These cases should be diagnosed carcinomatous adeno-fibroma (pericanalicular) and carcinomatous adeno-cysto-fibroma. *In other words, of eighteen adeno-fibromata comprising this series (the two adeno-fibromata showing transition to adeno-carcinomata, and one adeno-fibromata to medullary carcinoma, in other areas previously described, being added to the fifteen just described), seven, or thirty-nine per cent, showed distinct carcinomatous proliferation.*

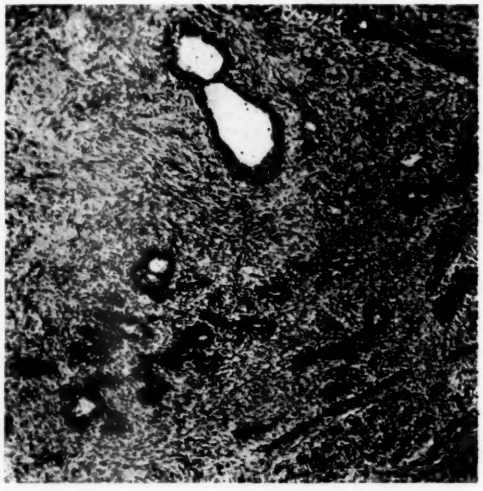


Fig. 4. Adeno Fibro Carcinoma (10). Distinct origin from adeno fibroma. Atypical epithelial cell columns and nests.

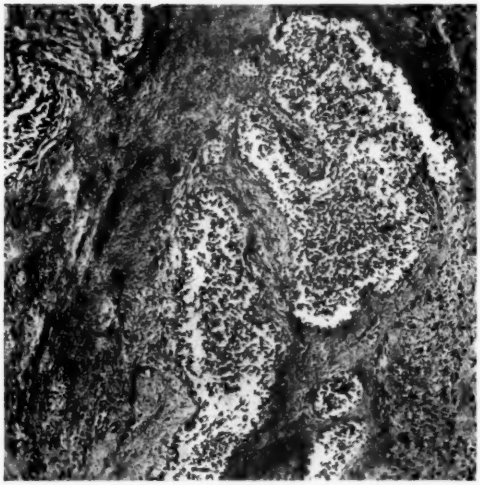


Fig. 5. Adeno fibro carcinoma (intracanalicular) from adeno fibroma (No. 76). Tongue-like ingrowths of fibrous tissue in dilated gland spaces with marked epithelial cell proliferation.

Hyde (7), in 1900, reviewed a study of eighty mammary tumors, and his conclusions concerning the fallacy of many so-called benign growths in the gland are certainly borne out by the study of this series. He quotes Balloch as saying that "adenomata are not the harmless growths many believe them to be, as there is great probability that they may and do become carcinomatous." These facts are akin to the malignant transformation of ovarian cysto-adenomata. (Twenty per cent show malignant transformation, in the experience of Shauta Klinik, Vienna.)

Carr (16) has laid stress upon the necessity of early removal of every tumor of the breast, regardless of its apparent benign nature, for competent microscopic examination. The microscope is not in all cases an absolute criterion of the nature of the growth, for the block may not contain the most suspicious part of it. Two or three blocks from different parts of the growth should be examined before a tumor is pronounced benign. The pathologist who examines but one part of the growth is in much the same position as the clinician who examines negatively but one specimen of sputum for tubercle bacilli. Every pathologist has seen cases like one mentioned by Hyde, in which a "tumor presented the picture of typical adenofibroma, and yet the axillary glands were infiltrated with cancer." This does not mean that an extensive removal shall be done at first in apparently benign tumefactions of the glandular structure, but it does mean that enough should be removed, when there is distinct evidence of new tissue formation, to enable the microscopist to examine sections from two or three parts of the growth, if necessary. If evidence of active atypical epithelial cell proliferation is present in what appears otherwise to be a benign growth, it unquestionably is safer to perform a radical operation for removal of the organ, skin, muscles, and glands.

Pilcher says: "If in any case doubt exists, it is far wiser to give the benefit of the doubt to malignancy, and to proceed at once to its extirpation." McGraw (17) states "that the surgeon should assume the skin, fascia, the muscle below, and all neighboring lymph vessels and glands as already infected, and that he should make the operation wide enough and deep enough to take in all suspected territory." J. C. Stewart (4) concludes that all tumors of the breast in women over forty must be considered malignant until proven benign. Pilcher (18),

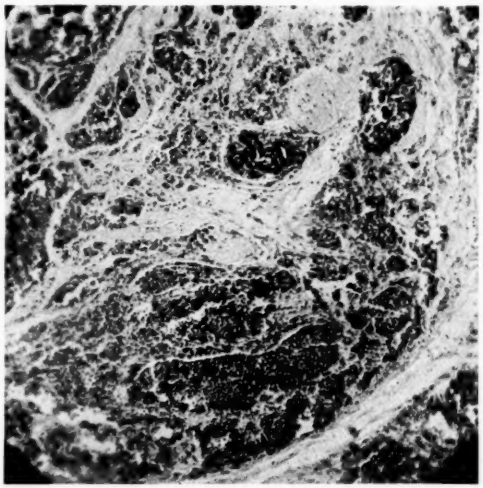


Fig. 6. Polymorphous cell melanotic sarcoma arising in the pigment cells of the areola of the nipple (No. 95). The deposit of melanin is very distinct.

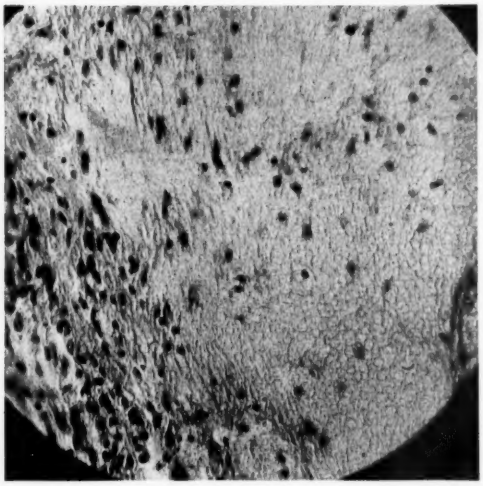


Fig. 7. Large spindle cell fibro-sarcoma (No. 94). Leitz 1-7 obj. oc. 2. Sarcoma cells in lumen of broken-down blood space (hematogenitic metastasis).

after citing cases, says his experience has emphasized the fact that nothing is more elusive than the apparent extent of the carcinomatous process. He insists that practically every case, when it has reached the stage of development at which a palpable tumor has formed, is already in an advanced stage, and that metastatic processes have, as a rule, already begun to be formed.

It really should be unnecessary to have our attention called to the procrastination so many times evident in this class of cases. I do not mean that when a woman develops a slight breast tumefaction she must be operated at once, but the facts have been before us so long that little excuse can be offered for delay, at least in careful diagnosis. It is true that since the statistics of Banks (19), quoted by Pilcher, 1877; from the Blllroth Klinik (20), 1878; of Volkmann (21), 1882; and of Heidenhain (22), 1889,—much has been done concerning the technic and the regions involved in removal of mammary tumors. The fact remains, however, that it is just as essential now to lay stress upon the early diagnosis of these growths as ever, and to call attention to the high percentage of malignancy in all definite tumors involving the gland.

A word before closing, regarding the operation. So-called cosmetic effects are many times desired by surgeons, with the result that as much of the growth as possible (conveniently) is removed, but without any too much removal of skin or muscle, for fear of unsightly scars or loss of arm function. While operating upon comparatively early cases, many surgeons do not resort to extensive removal of these tissues, for that reason. In the opinion of the writer, such an attitude retards the progress of surgery, for, after all, true conservatism, so much to be desired, should be measured only by the reasonableness of the attempt to cure, and the chances of cure are certainly not enhanced by leaving skin or the muscle with its infected fascia. Infection of the fascia over the muscle has been demonstrated again and again, even where the growth in the gland seems to be limited in extent. It has also been shown that attempted removal of the fascia by careful dissection, leaving the muscle behind, was practically impossible, since small infected portions were left and local recurrences frequent. The permanent disability after removal of the muscles is not great, and they should therefore be removed, where the surgeon has histologic knowledge of the malignant nature of the growth.

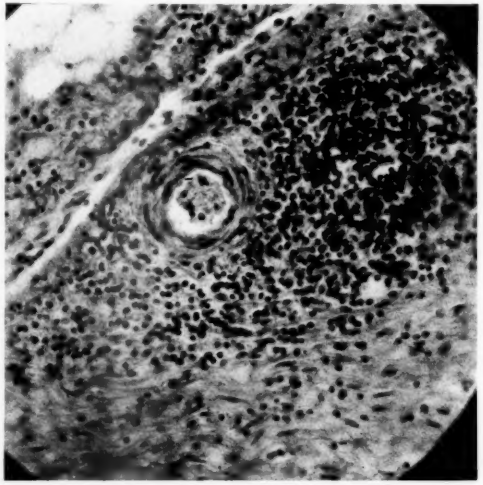


Fig. 8. Small round cell Sarcoma (No. 66). Sarcoma cells in blood stream (emboli).

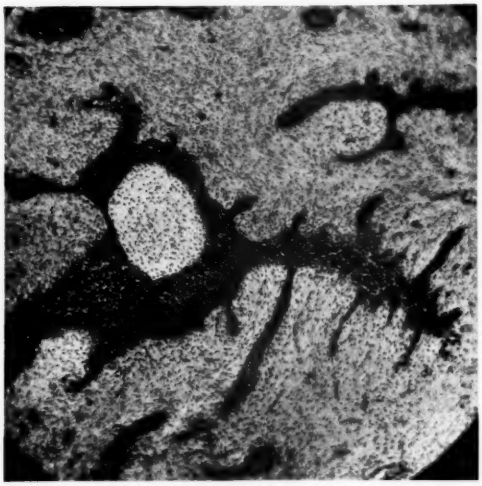


Fig. 9. Pericanalicular adeno fibroma (No. 97) becoming adeno carcinoma. The atypical branching gland spaces filled with epithelial cel s.

Where the glands in the apex of the axilla are involved, it is a safe rule to consider the supraclavicular glands also involved, even though not palpably enlarged before operation.

The deep cervical lymphatics connect with the axillary chain by two or three small glands beneath the clavicle, and recurrences are very common in this locality, even though the operation has been thorough in other particulars. The operation can be done in two stages, if necessary; the excision of the breast with good wide skin margins, the pectoral muscles and fascias entire, the axillary glands and connective tissues at the first operation, and after healing has taken place, division of the clavicle and removal of the supra and infra clavicular chains of glands.

Any incision (E. J. Senn's, Kocher's, or Halstead's) not carried through the middle of the axilla, but up over the pectoralis major, keeping away from the area of large sebaceous glands, is better to obtain primary union.

The radical operation, if performed early, should give from fifty to seventy-five per cent of permanent cures.

ADDENDA.—Since this article was written, two other papers bearing out points mentioned in it have come to my attention. J. C. Warren (*Annals Surgery*, December, 1904) found in five of one hundred consecutive cases that the carcinoma had developed as a secondary process in either a cyst-wall or in chronic inflammatory areas of gland tissue accompanying cystic degeneration. In another case, carcinoma was found developing in a small fibroma which had existed for twenty years. W. S. Handley (*Hunterian Lectures, London Lancet*, April 8-22, 1905, and editorial *Jour. Amer. Med. Ass'n*, June 3, 1905) mentioned that visceral recurrences took place in fifteen out of one hundred cases reported by Watson Cheyne, ten clinically abdominal and five thoracic. Most writers have held to the belief that extension to these regions was due to lymphomatous as well as hematogenous metastases. Handley believes in lymph-transmission, since he has in certain cases traced direct continuity between primary and secondary growths in the lymph-channels. This means that careful attention should be paid to removal of the deep fascias.

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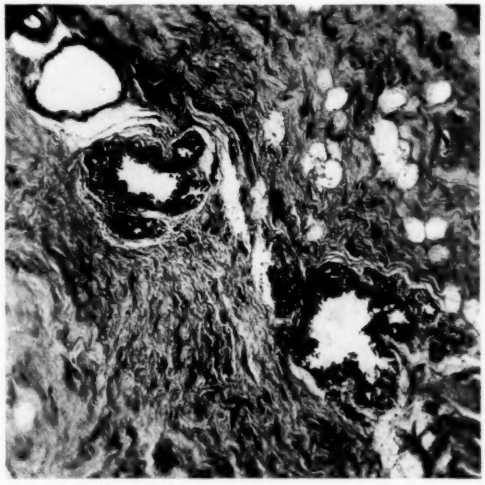

Fig. 10. Adeno cysto fibroma (No. 75) becoming carcinomatous. Epithelial cell proliferation of small cyst walls general throughout section.

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REPORT OF A CASE OF CÆSAREAN SECTION PERFORMED UNDER RELATIVE INDICATIONS

BY J. C. HOAG, PH. M., M. D.
Obstetrician to St. Luke's Hospital, Chicago

Twenty years ago I made my first visit to Vienna, in order to avail myself of the advantages offered by the largest obstetrical clinic in the world. During my attendance upon this clinic I observed that the obstetrical forceps was seldom employed, considering the immense number of labors that occurred there. Craniotomy, on the other hand, was frequently performed, both upon the living and dead child. During a stay of many months I had no opportunity to witness a case of Cæsarean section. The Sanger operation was attracting much attention throughout Europe, but I believe it had not been employed to any considerable extent outside of Germany. At this time, too, I visited London, and attended several meetings of the British Gynæcological Society where I heard discussions on the subject of Cæsarean section, during which the good results of Sanger were praised, although none of the members present knew exactly what the technic of his operation was. During this discussion, one of the formost obstetricians of England gave it as his opinion that the time had already arrived when the operation of craniotomy upon the living child should be abandoned. Ten years later, I visited Vienna again, and witnessed many craniotomies upon the living child, but also saw several Cæsarean sections, which were no longer novel operations, and which were attended by excellent results, though the operations, so far as I know, were restricted to cases where the indications were regarded as absolute, not relative.

I am not prepared to give the history of Cæsarean section in Chicago, but can now only state that when I performed my first operation, about thirteen years ago, the preceding cases had not been numerous, and the operations had been under the absolute indications.

Speaking at the present time of the status of the operation in this city, one may say that, even when performed for relative indications, it has long since ceased to possess any novelty, and furthermore, that its scope of usefulness is rapidly widening. Craniotomy upon the

living child should now be regarded as appertaining to the barbarous ages.

The following case is reported as an example of what can be accomplished under modern conditions by a timely operation of this kind.

Mrs. J., aged 22 years, an American by birth, was admitted to the hospital June 4, 1905. The patient was an only child. Her mother died during a pulmonary hemorrhage, at the age of 42 years. Her father died at the age of 30, from an unknown cause. During her infancy, the patient was comparatively free from sickness, and no history of rachitis could be obtained. The first menstruated at the age of 14 and her periods have been regular and normal. She had a miscarriage 16 months ago.

The date of her last menstrual period was doubtful, but occurred last October or November. The date of quickening was also doubtful. She thought she felt movements about the middle of March. During the earlier months of pregnancy, she suffered much from nausea and vomiting. During the later months she declined greatly in health, and became progressively more and more emaciated. She complained of pain in the right chest and was much troubled with cough and night-sweats. During the latter part of pregnancy the cough ceased. After the fourth month of pregnancy she had a continuous period of diarrhœa. At the time of her marriage she weighed 118 pounds. A continuous loss of weight brought her down, at the end of pregnancy, to a weight of 76 pounds.

When admitted to the hospital her condition was noted as follows: A frail woman, less than 5 feet in height, with the figure of an emaciated child of 12 years, aside from the abdominal distension of pregnancy. There is no spinal curvature, and no bowing of the bones of the legs. The face is pinched, and the facial bones prominent; the eyes are bright; the eyeballs sunken; the teeth are prominent, but many are missing or are carious; the tongue and throat are normal; the neck is very thin; the chest is small, with ribs showing plainly; chest-expansion is fair; the breasts are poorly developed, with small nipples; the heart is normal; examination of chest shows dullness in upper lobe of right lung; rales are absent; the abdomen is prominent, its walls are exceedingly thin, readily permitting the foetal parts to be seen as well as palpated; the vertex of the child presents in an occipito-right anterior position; the heart-tones are easily heard, and number 150 per minute; the vagina is normal; the cervix uteri is soft, but undilated

The pelvic measurements are:
Interspinous, 22 cm.
Intercristal, 23½ cm.
External conjugate, 15½ cm.
Intertrochanteric, 25 cm.
Internal conjugate, 7½ cm.
The blood count shows:
Red corpuscles, 3,664,000.
White corpuscles, 10,000
Haemoglobin, 60-70 per cent.

After admission, the patient was placed on a generous diet with tonics. Salicylate of bismuth and colonic flushings were employed to check the diarrhœa. The patient's general condition improved somewhat, for she slept better and had more appetite. The morning temperature was normal or sub-normal, but the evening temperature varied between 99° and 101°. The pulse ran constantly between 100 and 120. There was no cough. The urine was often examined, and was always found to be about normal. The sputum and fæces were examined repeatedly for tubercle bacilli, but without result. The diarrhœa continued with from 2-4 evacuations of the bowels per diem. From time to time, intermittent pains would come on, lasting 3-4 hours each time, and appearing to be labor-pains. On the night of August 10th, pains appeared and lasted for 12 hours, the intervals between them being 2-5 minutes. The cervix was soft and dilatable, but the head made no progress in descent.

On the 12th of August, the patient being greatly exhausted, and desiring to have the child taken from her, I performed Cæsarean section, with the approbation and assistance of Dr. T. J. Watkins, who had examined the patient about ten days before. We chose this operation, partly in the interest of the child and partly in the interest of the mother, the choice of operation lying between version and abdominal section. The external incision was made relatively high up, so as to enable one to make a high incision in the uterus, the point being to open the uterine walls where the peritoneum is firmly attached, as it is thought by some that an incision carried lower down in the uterus leads to inflammation of the loose tissues in that locality. The uterus was not drawn out of the abdominal cavity, but incised in situ. The placenta was not encountered. The uterus was quickly emptied of a vigorous child weighing 6 lbs., 10 oz. No special measures were required to check the hemorrhage, which was not extensive, though the uterine cavity was lightly tamponed while the suturing was being done. Catgut sutures were used throughout to unite the various structures, uterine walls, uterine serosa, parietal peritoneum, fascia and integument. The suturing was all of the continuous

character, which constitutes an important time-saving expedient.

The patient's subsequent history, in so far as the operation itself was concerned, was highly satisfactory; she had taken but little ether and was not nauseated; she had but little pain after the first 12 hours; the temperature did not run high; appetite was good; she was up in two weeks, and left the hospital at the end of three weeks. At this time she weighed 64 pounds, which was not far from her net weight before she was delivered of the child. At the present time I am informed that the hectic symptoms and diarrhœa still continues, the patient being doubtless tubercular.

A CASE OF CHORIOEPITHELIOMA FOLLOWING HYDATIDIFORM MOLE.

By W. L. BURRAGE, M.D., BOSTON,
Visiting Gynecologist St. Elizabeth's and Carney Hospitals
AND
T. LEARY, M.D., BOSTON,
Pathologist St. Elizabeth's Hospital, Professor of Pathology Tufts College Medical School.

THE present great interest in the subject of chorioepithelioma, the fact that this patient has been under observation from the beginning of her illness two and a half years ago, and the favorable result following early radical operation in this disease so fatal in its late stages because of metastases to other organs, render this case worthy of detailed report.

Whether there is a benign as contrasted with a malignant form of chorioepithelioma, as claimed by some writers, and whether we had to do with the mild form in our case, is not plain.

HYDATIDIFORM MOLE.

K. H., a native of Nova Scotia, 43 years old, entered St. Elizabeth's Hospital in the service of Dr. F. W. Johnson, February 8, 1903. We are indebted to Dr. Johnson for the privilege of reporting the first part of this case. The history was as follows:- Family history; negative. Previous history; measles and mumps in childhood. Married eight years; two children, the youngest four years old; four miscarriages, cause unknown, the last at six weeks, two and a half years before entrance. Menstruation at thirteen, and since then regular every twenty-six to thirty days, five days flow, four napkins, slight bearing down pains with the flow, which is of watery consistency. Present illness; menstruation occurred at a regular period on October 12, 1902, and was quite normal. The next flowing began December 22, and continued in the form of a slight staining until some-time in January, 1903, when the patient had a severe hemorrhage, lasting four or five hours. During the following weeks, a second hemorrhage occurred and the daily staining increased in amount until she entered the hospital, February 8.

At entrance the chief complaint was flowing, also backache, the pain being in the right side; headache, hot flashes, vomiting of three weeks duration, and poor digestion, and poor sleep. Physical examination showed a woman of spare build, medium height, dark hair, marked pallor of the skin (blood examination gave hemoglobin 40 per cent); the pelvis was occupied by an elastic tumor giving much the feel of an hematocele, the cervix uteri being in front of the mass high up behind the arch of the pubes, the os pointing towards the posterior vaginal wall. The abdominal walls were rigid, and it was impossible to map out definitely either the body of the uterus or the pelvic tumor. Dr. Burrage saw the case at this time in consultation and concurred in a probable diagnosis of extra uterine pregnancy with pelvic hematocele.

February 9 the patient was etherized, and it was then determined that the elastic tumor in the cul-de-sac had been the fundus of the uterus enlarged to the size of four months pregnancy, and retroflexed and incarcerated. The incarceration was relieved as soon as the patient was anesthetized. Slight uterine pains and a little flowing for a day or two attended the ether examination; then the condition was good until February 28, when severe labor pains accompanied by profuse hemorrhage came on and she was delivered within fifteen minutes of a large mass of hydatidiform cysts and blood clots, because of flowing. The uterine cavity was curetted several hours later with resulting slight loss of blood.

The following day on the temperature rising to 104 degrees, the uterine cavity was irrigated with hot sterile water. The remainder of the convalescence was afebrile, the flowing ceased, and the patient was discharged March 21, three weeks after the uterus had been emptied.

Pathological report: Specimen consists of a soft mass of gelatinous tissue enclosing clots, together with many free clots. Gelatinous mass is made up in great part of delicate stalked cysts, varying in size from a pin

head to a small grape, semi-translucent, partially collapsed. On floating specimen in formalin solution cysts gradually filled by inbibition and are seen to be terminal swellings of delicate branchings of a central stalk, from three to ten being attached to each stalk. Microscopic examination shows the cysts to consist of ends of chorionic villi: all are covered by the normal villi's coverings, which show nothing remarkable. The vessels usually occupying the centre of the villi are absent; the tissue is even less cellular than normal, and the mucoid substance is enormously increased. Attached to the swellings, are portions of decidua and abundant fibrin.

Diagnosis: Hydatidiform Mole. Mucoid Degeneration of the Villi of the Chorion.

CHORIOEPITHELIOMA.

One week later there was a profuse hemorrage which was not controlled by packing and Mrs. H. was admitted to the hospital a second time on March 30. Her pallor was now extreme; hemoglobin, 20 percent; pulse 115 and weak; uterus large and soft, three and a half inches in depth. The uterine cavity was swabbed out with tincture of iodine and packed with gelatin soaked gauze, the vagina tamponed and ergot administered by the mouth. The packings were renewed every day or two until April 8 with the effect of controlling the hemorrhage and benefiting the general condition and then the uterine cavity was curretted under ether by Dr. Johnson. There was abundant loss of blood during the curetting, much tissue being obtained.

Pathological report: Specimen consists chiefly of blood clots, also small pieces of uterine muscle and collections of large cells, many being degenerated in the superficial layers. The surrounding muscle tissue is deeply infiltrated with small round cells. No mitotic figures. The growth is apparently superficial and evidences of marked proliferation are absent. The tissue received does not admit of an absolute diagnosis but from the known malignancy of new growths of placental origin radical treatment is indicated.

The general condition of the patient was so poor that hysterectomy at this time was out of the question and after a course of tonic treatment, there having been no further flowing, she was discharged with directions to report immediately should there be any uterine discharge.

June 7, 1903, she entered the hospital for the third time in the service of Dr. Burrage. She had been flowing for three weeks, clots the first week and serous oozing the other two weeks. Oedema of the feet, especially at night. Blood examination showed hemogloblin 85 percent; white corpuscles, 7200. General condition very much improved; color good; gain in weight of seven pounds; sleep good. Heart and lungs negative. Urine cloudy, acid, sp. gr. 1022, albumin, a slight trace; sugar, absent; sediment shows a little blood and pus, and granular and epithelial casts.

The freely movable uterus was the size of a two and a half months pregnancy, elongated, symmetrical, and soft in consistency and there was a slight discharge of blood from the os. Vagina normal. By June 16, the casts and albumin had disappeared from the urine and a total hysterectomy was done by Dr. Burrage on this date, three and one half months after the delivery of the hydatidiform mole. The operation was performed with clamps and there was nothing noteworthy about it. There was no special tendency to hemorrhage; there were no adhesions and no extension of the disease to neighboring organs, and no enlarged glands. The convalescence was uneventful, the highest temperature being 99, and the patient was discharged well July 6, weighing 125 pounds.

PATHOLOGICAL REPORT.

Received uterus and adnexa. Uterus measuring 11.5 x14 c.m., had been laid open by a median incision posteriorly exposing a tumor mass which was apparently spherical, although distorted by contraction when received. It measured about 7.5 c.m. in diameter. New growth is contained in posterior wall in upper part of fundus and projects into uterine cavity, a small part of its surface being exposed in canal. Central portion of growth resembles firm dark clot, showing no structure. A thin layer of grayish, translucent tissue makes up the outer portion of mass and is quite definitely marked off from the surrounding muscle.

Formalin fixation: Hæmotoxylin and Eosin staining.

Microscopic examination shows central portion of tumor to consist of clot and detritus, with here and there a cell whose nucleus can still be made out.

The translucent layer is made up of a very cellular tissue, enclosing large lymph and blood spaces. Two definite types of tissue can readily be distinguished. The first, composed of polymorphous cells, occurs in rather large masses surrounded or invaded by the second, which is a plasmatic structure without distinct cell outlines. The cells of the first type are large and polygonal, circular, or elongated. This protoplasm takes the stain faintly, and shows a delicate protoplasmic network with unstained intervals between, limited by a definite cell membrane. Nuclei are vesicular, are in great part large and oval, but show marked variation in shape, size and staining properties. Most show a

delicate chromatin network, some a network of heavy threads, others masses of coarse chromatin granules. Mitotic figures are few.

Surrounding and invading this, as noted, are the syncytium-like masses of plasmodium. This has a reticular character, occurs in elongated branching cords, lines the blood and lymph vessels of the growth, and separates the cell layer from the uterine muscle. In some of the blood vessels or spaces projecting blunted masses of this tissue, extending into the lumen, suggest the so-called syncytial giant cells. The protoplasm is granular and takes a deep stain. Nuclei are oval, vesicular and regularly set. No nuclear figures are found.

The uterine muscle near the margin of the growth is deeply infiltrated with small round cells.

Diagnosis:—Chorio-epithelioma.

Dr. C. H. Hare kindly saw and examined the patient for us February 25, 1904, and reported that there was good union in the abdominal wound and the pelvis was free from exudate. There had been slight leucorrhea, no vesical symptoms, no hot flashes; weight 144 pounds, a gain of nineteen pounds since the previous July. Mrs. H. had done all her own work since leaving the hospital and regarded herself as well.

August 18, 1905, Dr. Hare again examined the patient and found that she has enjoyed good health since the last note and is to-day in good condition locally.

SOME CONCLUSIONS RELATIVE TO PROGNOSIS AND TREATMENT OF SARCOMATA OF EXTREMITIES, WITH REPORT OF FIVE CASES

By FREDERICK A. BESLEY, M.D., CHICAGO.

Professor of Surgery Post-Graduate Medical School, Instructor in Surgery Northwestern University Medical School, Attending Surgeon Cook County Hospital.

IT is an acknowledged fact that our definite knowledge of the etiology, prognosis, and treatment of sarcomata is very inadequate for our clinical needs. It has been stated, and with truth, that little if any advancement has been made in this knowledge during the past twenty-five years. A richer field for research and investigation does not exist.

The advance in surgery, and the benefit to humanity that would follow a clearer understanding of these most malignant growths, cannot be estimated.

While deploring, from a purely clinical viewpoint, the present status of our knowledge, let us not neglect to give due credit to the painstaking pathologists whose investigations of the histology of sarcomata have led to much more definite classifications.

Endotheliomata are now placed in a distinct subdivision, and the Grawitz Tumors, or hypernephromata, are no longer regarded as sarcomata.

The very fact that our knowledge is so limited and inadequate should act as a stimulus to greater efforts for advancement, and to this end careful records and reports should be made of every case. It is only from a large number of reported cases that we can hope to draw more accurate conclusions relative to the prognosis and the treatment.

The writer wishes to report five cases of sarcomata of the extremities, which have come under his observation in the last three years, and hopes to show by study of reported cases, and the cases here recorded—

First: That the length of time a tumor has existed should have little weight in the diagnosis, for or against malignancy—that is, the mere fact that a tumor has been developing for a number of years, without rapid growth at any time, should not be proof positive that it is benign.

Second: The character of the predominating cell has a direct relation to the prognosis and treatment.

Third: To lay particular stress upon the necessity of making frozen sections, and immediate microscopic diagnosis, at time of operation; for it is well understood that puncture or incision into sarcomata greatly increases the danger of metastasis.

The above procedure should be followed in all cases where the diagnosis of a tumor is at all doubtful.

A brief consideration of the general characteristics of sarcomata seems not out of place.

Sarcomata belong to the connective tissue type of tumor, and may spring from any organ containing connective tissue; but the most common sites for the primary growth are fascia, subcutaneous tissue, muscle, bone, cartilage, meningeal membranes, and more rarely the abdominal viscera. It is a most malignant neoplasm, the elements of which do not reach the morphologic structure of mature tissues. As a general rule the cellular elements greatly predominate over the framework, although some varieties have a well-marked stroma.

Much attention has been given to the proliferation of the tumor cells, and it has been noted that they divide by indirect segmentation, or karyokinesis.

Sarcomas have the power of metastasis, yet are not so prone to spread in this manner as are carcinomas. They sometimes involve the neighboring lymph glands, as is shown later in one of the cases to be described. Dissemination usually takes place by way of the blood stream, giving rise to metastasis in the viscera and lungs. This may be accounted for by the vascularity of these tumors, and the peculair structure of the vessel wall. The blood-vessels may be histologically perfect, or they may be bounded by sarcomatous cells.

The American text-book on pathology says: "A limb amputated on account of sarcoma should be carefully examined as regards the condition of its veins, in order to be able to form some idea as to the prognosis."

The varieties of sarcomata are the spindle-celled, large and small; the round-celled, large and small; giant-celled; melanotic sarcomata; and endotheliomata.

Sarcomas are of course subject to the same degenerations and inflammations that occur in other tissues; one of the most common being a mucoid metamorphosis. Tissues of higher and more mature structure are sometimes present, giving rise ot the fibrosarcoma, osteosarcoma, and others.

Gross states that the most common tumor of the long bones is sarcoma. There are two principal varieties, the myelogenic or central, and the periosteal or peripheral; the periosteal being the more malignant.

Following are the reports of five cases of sarcoma of the extremities:

CASE I. MR. J., aged fifty-five, presented himself at the Post-Graduate Hospital clinic in April, 1902. His complaint was a painless tumor on the posterior aspect of the upper arm. This tumor had existed for eight years, enlarging gradually. No loss of weight or cachexia. It was soft, freely movable, somewhat lobulated, and about the size of a large orange. There was no glandular enlargement. A diagnosis of lipoma was made, and removal advised.

The operation was commenced without a question of malignancy arising and no provision was made for a frozen section, nor consent obtained from the patient for an amputation. Imagine our chagrin to find that the tumor had no capsule, and that it invaded the soft structures in such a way as to leave little doubt as to its malignancy. The mass was removed as widely as possible, and the wound closed.

The patient was advised to have performed a shoulder joint disarticulation, but he refused to submit to the operation. About three or four months later he was seen and there was an extensive local recurrence. He still refused operation, and died some months later of local recurrence and metastasis.

Pathological report made by Prof. Rob't Zeit: Microscopical examination shows a spindle-celled sarcoma.

CASE II. MR. M., aged thirty-nine, farmer by occupation. Family history negative. He presented himself for a diagnosis in January, 1903, giving the following history:

About six years previous he noticed a small, painless swelling in the left forearm. He could not recall an injury to the arm unless it had been effected in handling heavy cord wood, allowing the stick to rest on the arm in lifting it. The tumor was never very large, and had enlarged very gradually until about six months previous. Since then he has experienced some pain, and the mass has increased in size rather rapidly. His general health was good, no loss of weight or cachexia, and no glandular involvement. The functions of the arm and hand seemed perfect. The tumor mass occupied the anterior aspect of the left forearm. It was spindle-shaped, firm n consistency, nine inches in length, and ten inches in circumference at its greatest diameter.

A skiagraph failed to show any involvement of the bone. The condition was diagnosed as a sarcoma, and amputation of the arm advised. Consent to the operation was given. At the time of operation a constrictor was first placed on upper third of arm, and a piece incised from tumor for microscopic examination. A frozen section was obtained, examined, and the report of sarcoma returned in about ten minutes. The examination was made by Prof. Zeit. Operation continued, and amputation accomplished.

The wound healed kindly, and there was never any

local recurrence or glandular involvement. He died about six months later of metastasis in the lung.

Pathological Report. Dissection of the tumor showed that it probably originated from the fascia, as the bone was free from involvement, and it seemed to have pushed the muscles aside, rather than to have invaded them. The consistency was in general firm, showing here and there signs of cystic degeneration.

Microscopic report by Professor Robert Zeit:

The growth consists principally of myomatous tissue, a loose network of connective tissue cells of polymorphous shape with anastomosing fibrillar processes, the meshes of which contain mucin. This mucous tissue is invaded by an atypical profilitation of round and spindle shaped cells, with large vascular nuclei which form irregular shaped islands or columns of densely packed cells, traversed by blood channels without walls in places.

From the history of the case it is probable that the tumor was myxoma of fascia or muscle sheath, which lately has become sarcomatous.

Diagnosis. Myxosarcoma.

CASE III.[1] MR. F., aged 60, farmer by occupation, family history negative.

About six months before entrance into the hospital he noticed small swelling in right forearm. The tumor gradually enlarged, but had not been painful. About three months after onset it was punctured by a needle, but nothing was elicited. Examination showed a spindle-shaped tumor of right forearm, and a diagnosis of sarcoma was made

The axillary glands were distinctly enlarged. The operation consisted of amputation of the arm at upper third, with careful removal of the axillary glands and fat. The patient died about six months later with local recurrence and metastatic involvement of the lungs.

Pathological Report, made by Professor Robert Zeit;

The tumor mass consisted almost entirely of small, round cells, of the type of lymphocytes—cells which consist nearly entirely of nucleus, with but a very thin marginal envelope of perinuclear protoplasm. A delicate fibrillar network forms the supporting stroma These small cell masses are traversed by channels of blood without endothelial walls, and blood vessels whose walls consist only of an endothelial layer.

Diagnosis. Small, round-celled sarcoma.

CASE IV. CHAS. N., aged fifteen, was a patient in the service at the County Hospital, January, 1905. Patient came to hospital complaining of "a sore leg." He told that the limb had begun to swell about four weeks before entrance. Some time previous to this he had sustained an injury, and he attributed the trouble to this fall. The leg was not painful immediately after injury, and became so only when it commenced to swell some time later. He likened the pain to needle pricks. During last two weeks tumor had been growing rapidly.

Examination. Right leg uniformly swollen below knee joint, apparently beginning in epiphysis of tibia. It was regular, extending downward for some distance, and diminishing gradually in size as it descended. No redness in skin but superficial veins were enlarged. No atrophy of leg.

General Condition. Patient emaciated and anemic. Face flushed.

February 1st the patient was given gas as a preliminary to ether, and it was intended to make a frozen section and amputate if it proved to be a sarcoma. Just after the incision was made into the tumor it was discovered that the patient's parents had refused consent to an amputation. A section of the bone was removed, and later examination showed a spindle-celled sarcoma. (This is a bad procedure and should not usually be done, for it increases the danger of metastasis.)

One week later consent to amputate was obtained, and a middle thigh amputation was performed. The wound healed by first intention, and the boy is still well; his general condition improving.

Pathological Report. (Made by Dr. Milton Weston Hall, Resident Pathologist of Cook County Hospital.) The specimen is a leg amputation some four inches above the knee joint. Except for a distinct lemon yellow discoloration of the fat, there is nothing abnormal in the tissue above the knee, or in the knee joint itself.

The posterior surface of the tibia for a distance of 10 cm. from the upper extremity is occupied by a tumor mass, which also extends around on to the internal and external surface of the bone, partly encircling it. The mass is fairly firm, but somewhat uneven in consistency. It is somewhat nodular and surrounded by a fairly definite areolar capsule. Dimensions 9 cm. ant.p., and laterally 9 cm. The cut section is yellowish white in color, somewhat moist, and slightly granular. On scraping, a milky juice collects on the knife. The growth appears to be everywhere external to the bone, as needles thrust through the mass everywhere met the bone in its normal situation, though in some places it feels rough and eroded. On the internal surface of the bone, at the insertion of the semimembranosus muscle, is an opening reaching to the marrow cavity, from which the piece for preliminary examination was removed.

The tumor mass has displaced the popliteal, and posterior tibial vessels and nerves backward and outward. The contiguous muscles are thin, pale and yellowish.

Microscopical Examination. Pieces for microscopic examination were taken from two places in the soft tumor, and from the marrow of the shaft several centimeters below any visible involvement. The latter shows abnormal tissue. The tumor specimens show areas of rounded protoplasmic cells lying in definite lacunæ of immature cartilage. Islands of this type are separated by bands and masses of cells practically without intercellular substance. These bands contain many types of cells.

There are large and small cells, spindle cells, the latter predominating. Multinuclear giant cells are also common. That these cells are in active proliferation is

[1] This case was seen with Dr. Frank Simpson, of Chicago, who has kindly allowed me to report it.

evinced by the numerous miotic figures found. These are usually distinct,and show all stages of the nuclear figure.

Division of the nucleus into three was once observed. The tissue is practically avascular, but contains here and there red cells, apparently free in the tissue spaces.

The histological picture justifies the conclusion that the tumor is a sarcoma of the myeloid type, apparently arising from malignant transformation of cartilage; presumably that of the epiphysis.

CASE V. ETHEL, aged ten, family and personal history negative, came under observation four weeks after sustaining an injury to the left knee, caused by being pushed from a step. Examination at this time showed a traverse fracture of the femur about three inches above the knee. The fracture was easily reduced, and reduction maintained with the patient anesthetised The limb was immobilized with a cast. The child seemed comfortable, and the cast was not removed until five weeks later, when a spindle-shaped tumor of considerable size was discovered. A diagnosis of sarcoma was made, and an operation advised. This was refused. The tumor grew very rapidly, until death occurred about six months after the injury.

Post-Mortem Examination showed a destruction of about one-third of the femur, with extensive involvement of the soft tissues. There was no metastasis. Microscopic examination showed a round-celled sarcoma.

Gross says that fracture occurs in about sixty per cent of this class of sarcomas. My reason for citing this case is to demonstrate the necessity for considering the possibility of sarcoma as a causative factor in fractures of the long bones of children, following upon slight injuries.

In passing I wish to cite three cases of sarcoma of various tissues, which have come under my observation; each one illustrating the fallacy of concluding that a tumor is benign because it has existed a number of years.

I. MRS. P., aged forty-two, housewife, family history negative.

Patient was seen with Dr. Smith, of Streator, Ill. She first noticed a small tumor in the roof of the mouth about ten years ago. It had gradually enlarged, until it became the size of an English walnut. On removal it was found to be encapsulated, and situated between the mucous membrane and periosteum, without being attached to either structure. It was soft and spongy in appearance, and microscopical examination made by Dr. Zeit showed it to be an endotheliomia.

II. MRS. L., Italian, aged fifty-five.

Patient came to Post Graduate Hospital complaining of a tumor of the neck, which, she said, had existed for from thirteen to fourteen years, having increased in size in the last six months. Examination showed a submaxillary lymphatic gland, about the size of a walnut. Its removal was easily accomplished, as there was no periadenitis or infiltration of surrounding tissues.

Microscopical diagnosis was tubercular adenitis with numerous giant-cells.

Two months later she returned with a large brawny tumor involving the tissues of the neck and of the inferior maxilla. A more careful study of the section of the gland revealed sarcoma.

III. MRS. S., aged fifty, family history negative. No history of venereal diseases.

The patient presented herself at the clinic of the Post Graduate Hospital, complaining of a tumor of the upper lip, which had existed for eleven or twelve years, having become more noticeable during the past month. Examination showed a mass in the deep tissues of the lip about the size of a large bean. It was removed and found on microscopical examination to be an endothelioma

Note that in all three cases these tumors had existed for a number of years—ten, thirteen, and eleven respectively—without rapid growth at any time, and yet they were all malignant.

In the eight cases above referred to, five of the tumors had existed for a period ranging from six to fourteen years. This in itself, I think, justifies the assumption that the length of time a tumor has existed has no direct bearing upon its character.

Bilroth once said: "The subdivisions made according to the histological peculiarities of the various sarcomas are of no great value during life."

With our present knowledge we do not hesitate to say that such a broad statement does not hold, and that the diagnosis of the character of the predominating cell does influence the prognosis and treatment.

Gross, in his report of 165 cases of sarcoma of the long bone, draws these conclusions as to their malignancy:

The tumors occurring in order of their malignancy are periosteal spindle-celled, periosteal round-celled, periosteal osteoid, myolegenic round-celled, myolegenic spindle-celled and myolegnic giant-celled.

Scudder's conclusions in his report of fifteen cases of sarcoma of long bones are that the giant-celled sarcoma is the least malignant, and he states: "If the giant-celled sarcoma is limited to, and localized in the bone, a resection is justifiable. If the soft parts are involved, amputate in the continuity of the bone if the epiphyesis alone is diseased, and amputate at or above joint, if shaft is affected."

Parker reports a case of myxosarcoma of

the tibia with amputation through the knee joint. There was recurrence with a second amputation through the thigh, the patient remaining well.

McCosh seems to show in his report of cases that the giant-celled sarcoma is the least malignant.

Not one of the five cases reported by the writer was a giant-celled tumor. Four of the cases have succumbed, and the fifth is still too recent to consider as a cure.

Reports and statistics bear out the statement that the character of the cells relates directly to the prognosis, and possibly to the treatment.

It is a recognized fact that a microscopical diagnosis of a tumor is not infallible, but that it is an essential aid to the clinical diagnosis cannot be disputed. Not to avail ourselves of this aid is to fail in our duty to our patient, and to ourselves. This assistance is always at hand, and can be quickly obtained by cutting and examining a frozen section. The time required for such procedure is from ten to fifteen minutes, and it can be done by removing a section of the tumor under local anesthesia, after a constrictor has been placed around the limb. As soon as a diagnosis is made, or the clinical diagnosis is confirmed, the necessary operation can be performed.

Every surgeon is frequently confronted by a tumor, the nature of which he cannot determine even after an incision into the mass has been made. Granting this, and understanding how often all clinical signs and symptoms fail, one should never undertake the removal of a tumor of the extremities, in which the diagnosis is at all doubtful, without a microscopic diagnosis, and consent of the patient for amputation obtained.

The treatment of sarcomas of the extremities is unquestionably not satisfactory, and one is likely to grow discouraged when going over the records. Yet many authentic cures have been reported.

That amputation, or resection, is justifiable in early cases there can be no question, and one's whole aim should be toward an early diagnosis, and extensive removal.

Glandular involvement occurs only in a small proportion of cases; therefore, it is not essential that the neighboring lymphatic glands be removed unless they be enlarged.

Many good surgeons practice resection of the bone for some forms of sarcomas, particularly the giant-celled tumors not involving the soft parts.

In view of the fact that many of the new growths are of the mixed variety, and that certain sections may show a preponderance of giant cells and other sections round or spindle cells, I think that one is not often justified in doing anything less radical than an amputation.

In making this statement I am taking issue with several distinguished investigators who believe resection to be a justifiable operation.

A word against the all too common use of the X-ray in the treatment of tumors of the extremity. Such practice often leads to a late diagnosis and a fatal termination, when early operation might have resulted favorably.

Coley,[1] in reporting 103 cases of malignant tumor treated by Roentgen ray observed over a period of two years, concludes:

1. The use of the Roentgen ray in cancer should be limited to recurrent and inoperable cases, with sole exception of small superficial epithelioma of the face.

2. It is most misleading to report as cured cases in which malignant tumors have disappeared under influence of X-ray, since speedy return is the rule rather than the exception.

3. At the present moment there is no evidence to prove that any permanent cures have been obtained, save possibly in cases of rodent ulcer.

To summarize, I believe that we can conclude definitely:

1. Tumors must not be regarded as benign because they have existed a number of years.

2. That giant-celled sarcomas are less malignant, and may in individual cases be subjected to less radical treatment than amputation.

3. That no tumor of an extremity, where diagnosis is doubtful should be attacked without facilities for making an immediate microscopical diagnosis by means of a frozen section.

[1] Med. News, 1904.

THE OPERATIVE TREATMENT OF RETRODISPLACEMENTS, WITH A NEW OPERATION; INTRAMURAL TRANSPLANTATION OF THE ROUND LIGAMENTS[1]

By CHANNING W. BARRETT, M. D., CHICAGO

Professor of Gynecology, Chicago Clinical School; Adjunct Professor of Gynecology, Medical Department of the University of Illinois; Attending Surgeon and Gynecologist to Marion Sims Hospital

IN the presentation of the subject in hand, I wish, for the sake of brevity, and in order not to sacrifice clearness, to make the following propositions:

1. That retrodeviations of the uterus are frequent;

2. That they are pathological *per se;*

3. That they tend to create further pathology;

4. That, because of the symptoms which they produce and the further pathology which they create, they are, with few exceptions, deserving of treatment.

Accepting these generally believed statements as facts, and leaving a discussion of their merits for another time and place, we may at once enter into a consideration of the best treatment to be applied. This will best be understood after a review, though brief, of the normal position and supports of the uterus, and a consideration, though brief, of the etiological factors of retrodisplacement.

POSITION AND SUPPORTS OF THE UTERUS

The uterus lies in the pelvis, with the cervix directed backward, and held up well toward the hollow of the sacrum by means of the sacrouterine ligaments. The fundus is directed forward, and held by means of the round ligaments acting as guy-ropes. The broad ligaments, running from the sides of the uterus to the pelvic wall, together with the previously named ligaments, and the connective tissue, blood-vessels, nerves, etc., act as carriers of the uterus and adnexa. Much aid is given to these carriers by the intact pelvic floor. With the bladder empty, the long axis of the body of the uterus is nearly horizontal, while that of the cervix is continued backward from that of the body, and slightly downward. There is now a range of normal movement and a wider range of abnormal movement. Under normal conditions, the uterus is so nicely balanced that with each step, respiratory effort, cough, or jar, there is a corresponding movement of this organ.

CAUSES OF DISPLACEMENT

Being thus suspended, it is evident that the uterus will be displaced by,—1. Anything which increases the weight of the uterus; 2. Anything which lessens the carrying power of its supports, —the ligaments, cellular tissue, pelvic floor, etc.; and 3. Anything which makes traction or exerts force in the wrong direction.

The conditions which may produce one or more of these harmful influences are numerous. A torn pelvic floor may lessen the carrying power of its supports, and a rectocele and cystocele produce traction downward upon the cervix. A chronic congestion will cause the uterus to take a lower position, on account of increased weight. Inflammatory adhesions contract and make backward traction upon the uterus. But, whatever the causes of the retrodisplacement, the almost constant results of those causes are, 1. Elongated sacro-uterine ligaments, allowing the cervix to go downward and forward; and 2. Elongated round ligaments, allowing the fundus to go backward; 3. The broad ligaments are also somewhat stretched, allowing the uterus to take a lower position.

Co-existent with the retrodisplacement, we may have adhesions, inflammation, pus-tubes, cystomata, fibroids of the uterus, and numerous other complications, and many of these may bear the relation to the retrodisplacement of cause or effect.

The diagnosis should determine not only the fact of displacement, but the presence or absence of complications, and the nature and extent of the complications. The length of time that the retrodisplacement has existed and the circumstances of the patient will also, to some extent, determine the procedure to be chosen.

It is well to bear in mind that we are dealing

[1] Read before the Chicago Medical Society, June, 1905.

with a condition which is troublesome, which tends to create further pathology, but which has no considerable mortality. The treatment, then, must not only look toward the amelioration of the symptoms, but, essentially, it must be safe. If an operation is chosen, it is usually an operation of election, and not "last-resort" surgery. In an almost fatal case of appendicitis, a slightly less fatal operation may be chosen; but in elective surgery an operator and an operation that assure the least possible mortality should be chosen.

TREATMENT

The dash of surgery sometimes carries us far afield and this has been shown in dealing with retrodisplacements. Too little stress has of late years been laid upon the non-operative treat ment.

Having pointed out this treatment in a previous paper (*Medical Standard*, Dec., 1894), I wish in this connection only to indicate the class of cases in which we should use non-operative treatment, and then take up the consideration of the operative treatment.

Cases without intra-abdominal complications, with a fair pelvic floor, and with only moderate pathology in the uterus, may be given the non-operative treatment if the conditions are such that the patient can remain under observation and treatment for some months. Better results are to be attained in these cases if only a short time has elapsed since delivery, or since the retrodisplacement began. The non-operative treatment may be expected to lessen the symptoms in many cases that refuse operative treatment, and may at times be useful as a preparatory treatment to operation.

After we have been as conservative as is consistent with the welfare of our patients, we still have a large percentage of cases which must have something more than non-operative treatment.

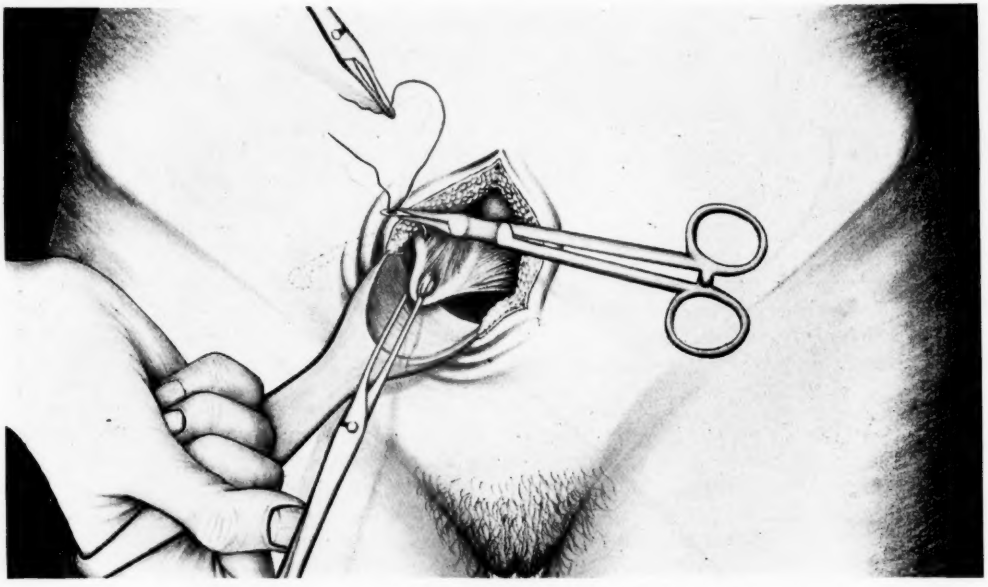


Fig. 1. Showing the control ligature being placed under the round ligament.

OPERATIVE TREATMENT

In choosing an operation for retrodisplacements, there are certain essentials which should not be ignored, no matter what the condition present or what the operation chosen.

1. The operation must have the slightest mortality, *per se*, and be in safe hands.

2. The incision must allow the correction of the complication.

3. The operation must create the least possible pathology.

4. In a child-bearing woman, it must allow of no interference with future pregnancy.

5. It must assure us of a permanency of results, with or without future pregnancy—must stand Goldspohn's "double test of pregnancy."

6. It must have the least possible morbidity.

When we consider that the causes of retrodisplacement are anything which increases the weight of the uterus or decreases the carrying power of its supports, or exerts force in the wrong direction, it will be seen that a beginning retrodisplacement may be checked by a curettage, or a repair or amputation of the cervix, or the removal of a polyp, or the repair of the perineum, or two or more of these procedures. But this disposes of only a small percentage. There yet remains a large class of cases in which something additional must be done to correct or take the place of elongated, attenuated ligaments. We would divide these cases into three sections:

A. Those with no intra-abdominal pathology;

B. Those with minor intra-abdominal pathology;

C. Those with extensive intra-abdominal pathology.

For those cases which fall under section A, we have standing out pre-eminently the most excellent operation of Alexander, sometimes called the Alexander-Adams operation, and sometimes the Alquæ-Alexander-Adams operation. For this excellent operation these men deserve great credit, but have received a full measure of condemnation. Used as it was in cases with complications, in which it was contra-

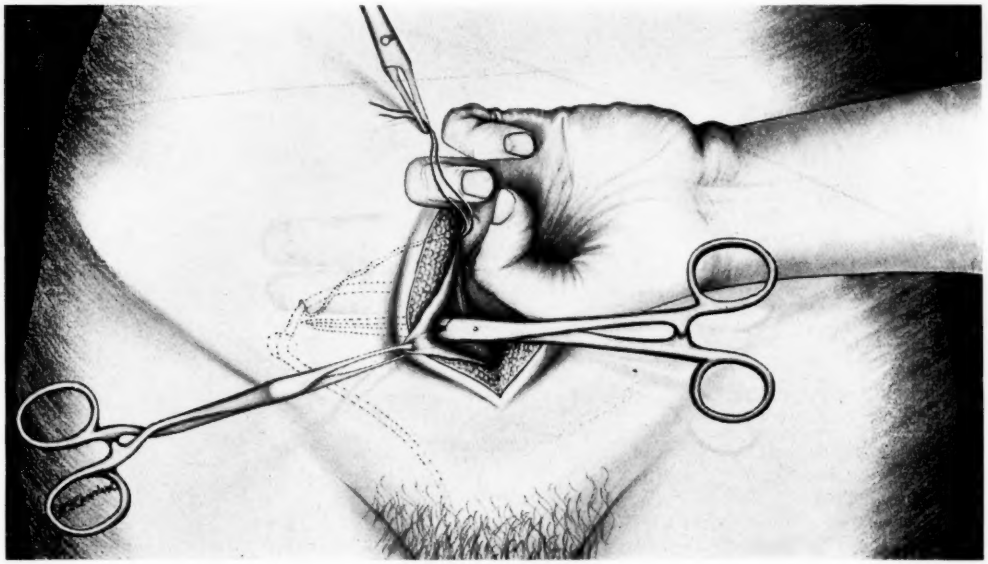


Fig. 2. Showing the ligature carrier being introduced under the aponeurosis to the inguinal ring.

indicated, it either failed to hold the uterus, or failed to relieve the patient of the symptoms. This, with its modifications, picking up the round ligaments outside of the peritoneal cavity, creates no intra-abdominal complication where there was none, meets the above-named essentials for an operation, and allows us to feel that even in a young unmarried woman we have left her as a woman should be. The only regret is, that so many cases fall into sections B and C, because of some complication which necessitates opening the abdomen. The dan-

ger of opening the abdomen is not so great as when Alexander urged the advantage of this extraperitoneal operation, and yet we have not attained that science that we can save every patient, nor can we even foretell which one will be lost, and until that time comes we cannot ignore the advantage of an extraperitoneal operation in those cases in which there is no intra-abdominal trouble, even though our mortality be slight.

Mackenrodt's operation of fixing the anterior surface of the uterus to the vaginal wall has been done in these cases, but with disastrous results in some cases in which pregnancy followed.

follows the round ligament into the abdomen, and through the dilated internal inguinal ring breaks up adhesions, resects or removes an ovary, removes a tube, etc. In my own experience I have found this a valuable addition to our operative resources. In these cases with minor pathology, it seemed best in the days of ventro-suspensio-fixation to work through an undesirable opening, in order that a more desirable operation could be performed. Now the writer performs the Goldspohn-Alexander operation less frequently, and Dr. Goldspohn has personally stated that he has found the need

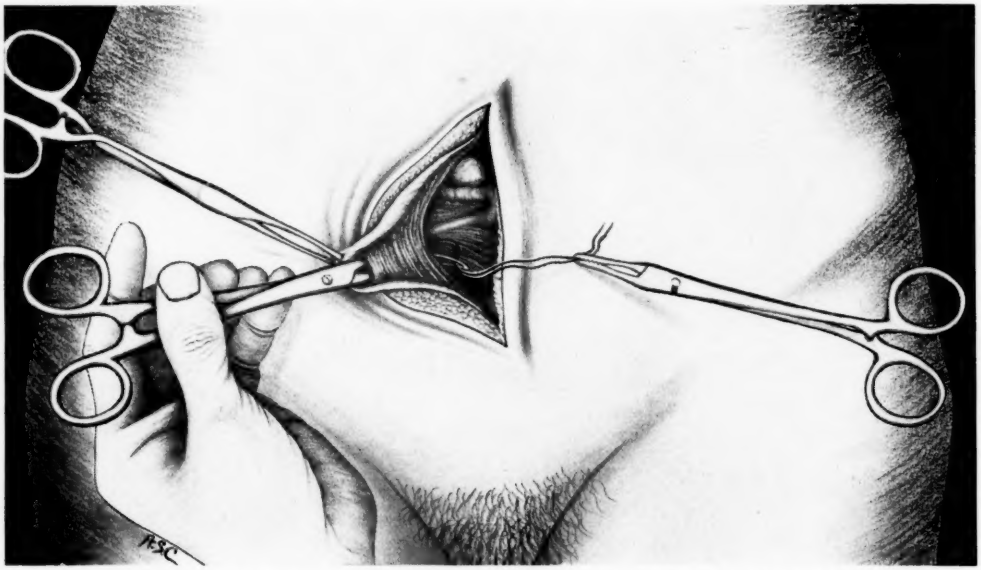


Fig. 3. Showing the ligature carrier turned back so as to bring the beak to the abdominal incision.

Cases in section B require an opening in the abdomen. It is not desirable, with the time that we have at hand, even to mention the several scores of operations which have been devised for complicated cases of retrodisplacement. Suffice it to say that a number of worthy operators have thought so well of the Alexander operation, that efforts have been made on their part to extend this operation to these cases having minor pathology. Breaking up adhesions and doing minor work through the posterior cul-de-sac has been done, thus preparing the case for the Alexander operation. Goldspohn

for his operation decreased since the advent of recent round ligament operations. However useful the above operations may be for cases with no complication, or with only slight complication, we now come to the consideration of those cases of retrodisplacement in which there is sufficient intra-abdominal pathology to require the best possible opening for doing the work; dealing with the pathology becomes of primary importance, and the operation for the retrodisplacement conforms to the necessities of the case. Some have here chosen the vaginal route, but it has always seemed to the

writer that reason was against this, both as to the route for operating upon the pelvic pathology and as to the operation that could be performed for the retrodisplacement. A low suprabubic incision 1½ to 2½ inches in length, enlarged if necessary, is the opening of choice. Through this opening structures can easily be reached and inspected, and injuries to the bowels, ureter, etc., may be prevented, or if produced, recognized and repaired.

Now that the median incision is used and the work in the abdomen done, we have to make a choice of an operation for holding the uterus forward. Ventro-suspensio-fixation has been common, but has only ease of performance to recommend it, and it is now getting to be as unpopular as it was once popular. The unnatural attachment, the false ligament, and the uncertainty as to the size and strength of the ligament, and the harm it may do should pregnancy occur, cause one to wonder that the operation could have become so popular. In performing ventro-suspensio-fixation, one is "between the devil and the deep sea." He performs fixation, and to ease his conscience calls it suspension; or he performs suspension and trusts that it will stay "fixed." He would not, if called upon to operate upon a pregnant woman, attach the uterus to the abdominal wall, yet he attaches the uterus that may become pregnant two months thereafter. He leaves an ovary or a portion of an ovary, hoping that the uterus will functionate, and then attaches the organ so that it cannot. He puts sutures deep in the uterus, attaching it firmly, and uses catgut that it may be temporary. He creates a pathology in the false ligaments, that in another patient he would perform laparotomy to remove if the condition was diagnosed. Edebohls, in some cases, uses the median incision for intra-abdominal work, and then makes the side incisions for the Alexander operation. Martin suspends the uterus by means of a strip of peritoneum drawn through the uterine wall.

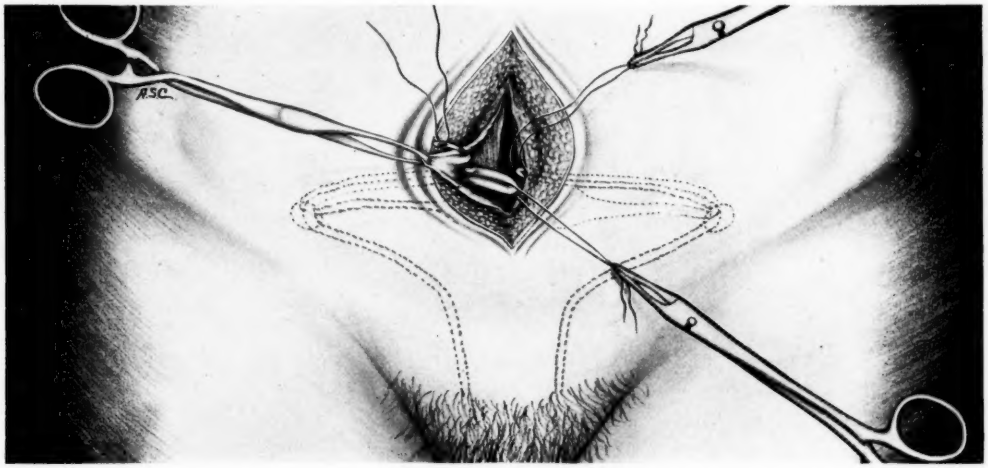


Fig. 4. Showing the loops of round ligament being sewed to the under side of the aponeurosis.

Many efforts have been made to utilize the round ligaments when intra-abdominal work is necessary. We should divide these operations into two classes: 1. Those which retain the proximal or strong portion of the ligament as a support; 2. Those which retain the distal or weak, attenuated portion of the ligament. The latter class of operations, of which there is a large number (Wylie, Mann, Dudley, Webster, Baldy, Ries), places confidence upon the outer, weak end of the round ligament, of which this portion of the ligament is entirely unworthy. This has done much to condemn intra-abdominal operations upon the round ligament, and to

cause operators to resort to ventro-suspensio-fixation when complications require the abdomen to be opened.

The former class of cases could well be subdivided into those which reach the round ligament external to the internal ring, through some more or less extensive and tedious dissection (Noble, Barth, Sandberg), and those which secure the round ligament in the abdomen, where they are readily picked up (Gilliam, Ferguson, McGannon, Montgomery). The former have a decided drawback by reason of the dissection, but a decided advantage by reason of the normal relations of the round ligament to the internal ring and in the abdomen. The latter have an advantage in the readiness with which the operation may be performed, but are unfortunate by reason of the pathology which they create.

To secure all the advantages of the Alexander operation, and yet have an operation which could be combined with the median incision, and still avoid the creation of pathological conditions, as in the Ferguson-Gilliam operation, the writer began in 1903 to perform the following operation:

1. The abdomen is opened in the median line, through an incision 1½ to 2 inches in length.

2. Intra-abdominal complications are dealt with.

3. The round ligaments are picked up with the author's rubber-jaw forceps, and a control ligature is thrown around each ligament, about 2¼ to 2½ inches from the angle of the uterus. If they are exceedingly well developed, a longitudinal slit is made over the ligament, and the peritoneum not included.

4. The edge of the aponeurosis over the rectus muscle is now grasped close to the lower angle of the wound, and the author's curved ligature-forceps are carried between the aponeurosis and the rectus muscle, outward to the natural exit of the round ligament, the internal ring, where the forceps is guided into the abdomen by sight or by means of one or two fingers through the abdominal incision as a guide. It is not difficult to have the forceps follow the round ligament subperitoneally to the control ligature.

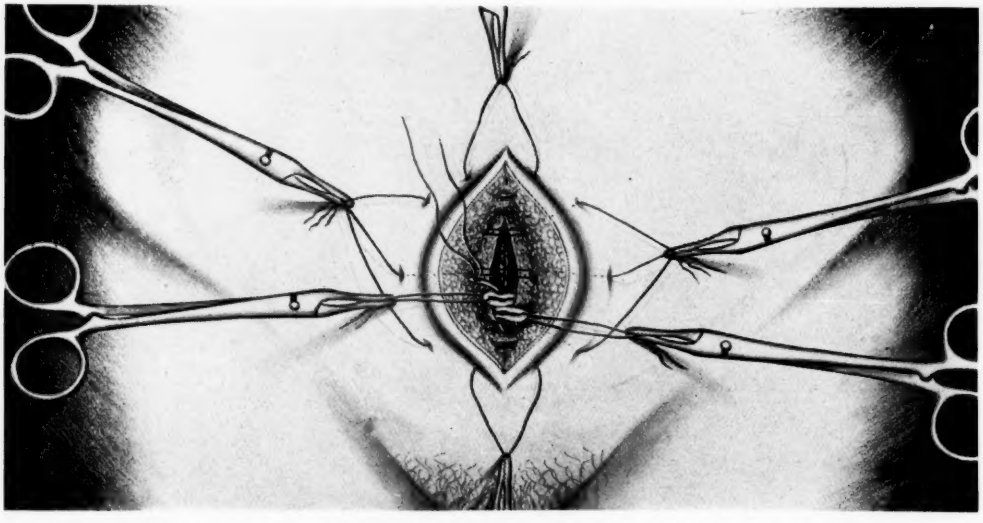


Fig. 5. Showing the loops of round ligament being sewed together in the median line under the aponeurosis.

5. The forceps now grasp the control ligature, and it is withdrawn, and along with it is a loop of round ligament.

6. Each loop of round ligament, while being held by the control ligature, is sewed to the under side of the aponeurosis with catgut, about one inch from the median line, and should the

loops prove long enough, as they frequently do, they are sutured together in the median line over the recti muscles.

Tracing the round ligament, we now have it running from the uterus to its normal exit, the internal ring, then under the aponeurosis to the lower angle of the abdominal incision, close to the symphysis pubis, to the under side of which aponeurosis it is attached one inch from the incision. The ligament now retraces its steps

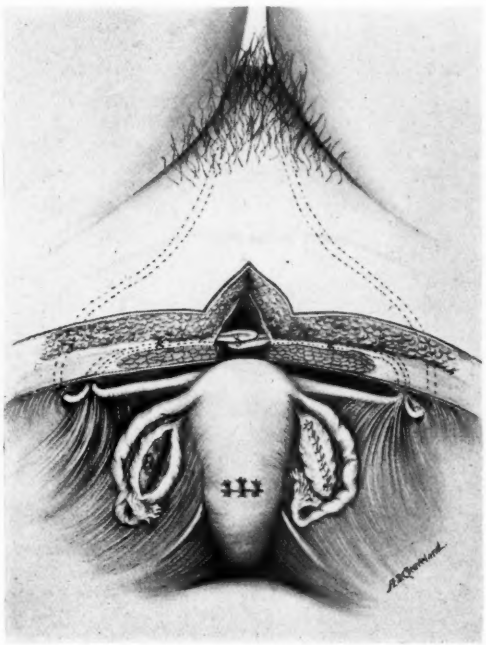


Fig. 6. Showing the disposal of the round ligament after it leaves the abdomen at the internal ring, and also the completion of the author's operation for anteflexion of the uterus.

to the internal ring, from whence it follows its normal course to the labium majus. This leaves no opening for strangulation of the bowel. The ligament leaves the abdomen at its normal place and utilizes the normal structures as a pulley for the round ligament. The uterus is now held by the very best part of the round ligament, a ligament which has capacity for evolution during pregnancy and involution thereafter.

The charge has been made against these internal operations on the round ligaments that they have no statistics in regard to pregnancy, but I maintain, and I think rightly, that anything which can be said of the Alexander operation as regards pregnancy can be said of this. The ligament carrying with it the peritoneum will hold some cases of retrodisplacement that would fail to be held by the stripped ligament, as we have in the Alexander operation.

The nature of the operation has led the author to term it "*intramural transplantation of the round ligaments.*"

This operation has seemed to present the following advantages:

1. It may be employed where there are intra-abdominal complications of any extent, and through the best possible opening for dealing with those complications.

2. It is easy of execution through even a very small opening.

3. It creates the least possible pathology, forming no new ligament.

4. It utilizes the very best part of the round ligament, acting through the internal ring.

5. It has shown the highest efficiency in holding the uterus forward and yet allowing the normal range of movement.

There are cases in which it seems wise to supplement the round ligament operation by a shortening of the sacro-uterine ligament.

There has been no effort in this paper to give a review of all the operations that have been proposed, but rather to give a clear working outline, and to present the author's slight contribution to the subject.

To conclude:

1. Retroversio-flexion, a frequent pathological condition, which tends toward greater pathology, is deserving of some form of treatment, and that the best for that particular case.

2. Sometimes the treatment should be, and sometimes is of necessity, non-operative.

3. Curative treatment oftentimes must be operative.

4. Any operation in any operator's hands must have a high percentage of permanent cures, an exceedingly low mortality, and slight morbidity, or it is to be condemned in that operator's hands.

5. Curettage, repairs of the cervix, repairs

of the perineum are frequently required, and in some beginning cases all that is necessary.

6. The Alexander operation is an operation of choice with no intra-abdominal complications.

7. The Goldspohn operation, or some other method of extending the Alexander operation, may be chosen when dealing with minor complications.

8. The median subrapubic incision is the best route through which to attack complications, and should be chosen if the complications are extensive.

9. Ventro-suspensio-fixation is not to be chosen in any woman who may become pregnant, unless immediate termination of the operation is of the greatest necessity.

10. All operations upon the round ligaments which retain the weak distal end of the ligament presuppose a strength in the attenuated outer end which frequently does not exist.

Cut of special forceps used in grasping the round ligament.

11. The utilization of the proximal strong end of the ligament for holding the uterus forward is highly desirable.

12. This is accomplished with almost a certainty of results and without the creation of new pathological conditions in intramural transplantation of the round ligaments here presented.

PHIMOSIS: ITS TREATMENT BY A NEW TECHNIQUE [1]

By V. D. LESPINASSE, M. D.

Instructor of Genito-Urinary Surgery, Northwestern University Medical School. Member American Urological Association.

IN considering this subject, one of the oldest in medical literature and standing on the boundary line between science and religion, one would think there could be nothing new proposed.

The question as to the advisability of routine circumcision has always provoked discussion the salient points of which both pro and con are here tabulated for your consideration, but judgment is deferred.

Arguments in favor of routine operation are as follows:

1. Religious, for cleanliness.
2. Hygenic, for cleanliness.
3. Sensitiveness of glands diminished.
4. Lessened number of recesses, folds, and pockets, hence less danger from infections of all sorts.
5. Relieves irritation and so prevents reflex manifestations of various kinds.

Arguments against the operation:

1. Religious, is a mutilation.
2. Prepuce has the function of protecting the sensitive glans.
3. Sensitiveness lost, glans become calloused, hence sensations diminished.
4. As prepuce never bothers innumerable people why expose them to the danger of operation.
5. Increases liability to infection and hence prevents exposure venereally.

Phimosis may be defined as a narrowing of

1. Read at the 16th Annual Meeting of Baltimore and Ohio R. R. Surgeons, Pittsburg, Pa., June 30. 1905.

the preputial orifice of sufficient degree to prevent easy retraction of the prepuce over the erect glans.

Congenital.—It may be mentioned as an interesting fact that there seems to be no tendency for the prepuce to disappear, or even become smaller, in those people who have practiced routine circumcision for centuries.

Acquired.—To account for this type we have several definite pathologic processes. The most common is the resultant scars from soft chancres situated at or near the muco cutaneous junction. Next we have tears of prepuce, usually occurring in an already partially phimosed organ and being split by forced retraction over the erect glans.

Inflammatory.—This variety may be due to various causes:

First.—Ulcerative.

Any abrasion or ulceration that has been mentioned before under cicatricial may, if they become sufficiently infected, cause swelling and oedema of prepuce with marked stenosis of the orifice.

Second.—Inflammatory.—

The same pathologic conditions in the prepuce may be brought about by severe local inflammations involving the urethra, the glans penis, or the uretheral follicles around the fraenulum (Para fraenitis).

Mixed.

These are usually afflicted with a slight degree of congenital stenosis and now have some of the various acquired forms as well. They are the common cases met clinically in young adults whereas the congenital are the ones met almost exclusively in childhood and infancy.

Pathology—Congenital type.—As we are discussing preputial stenosis, naturally the first consideration in its pathology is the site of the stenosis. This is usually at or near the muco cutaneous junction. Adhesions between the glans and inner leaf of prepuce are frequent, especially at the crest of the corona and the sulcus or any artificially formed cavities are more or less filled with smegma which, if it has been long confined, may be quite hard. The fraenum may or may not be advanced on the glans extending forward a variable distance distance even to the meatus and thus causing a bowing of the penis when it becomes erect. The gland itself is usually smaller and less developed in phimosed individuals than in others, being more conical, less rotund and smaller size. Reflex and associated phenomena as eneuresis, convulsions, pruritus scroti, masturbation, eczema, epilepsy and hernia have all been attributed to irritation engendered by a long prepuce. Nevertheless the exact role the prepuce plays in these affections is not clear, although it is attributed to that blanket phrase reflex action. But we know from clinical experience that frequently these conditions are relieved absolutely or markedly benefitted by an amputation of the prepuce. The sequence of events in their pathogenesis is as follows: The irritation calls attention to the genital organs by inducing itching, to relieve which patients roll glans between their fingers, rubbing and scratching the parts and so inducing the habit of masturbation or provoking a scrotal eczema. Likewise a stenosed prepuce necessitates more force during micturition, hence greater straining and with increased abdominal pressure the ingunial openings are prevented from closing, or may be even reopened, producing a hernia. The production of convulsions and epilepsy by phimosis is accounted for as follows: The irritation acting on the child's unstable nervous system produces such a shock that its functions are disarranged and a convulsion is produced. Whether or not this is a valid explanation is still an open question.

The direct cause of all this irritation and secondarily of so much disaster is not the elongated prepuce itself or its stenosis but the presence of retained decomposing smegma, which like any other organic fat in the presence of heat and bacteria becomes rancid, producing soaps and fatty acids, these being kept in contact with the glands produce irritation in conjunction with the bacteria present, thus giving rise to inflammatory and ulcerative phenomena.

In inflammatory types of phimosis either the process was commenced by an ulceration or several have been produced by it. They are scattered on the inner leaf of prepuce, in the sulcus, around the fraenum or on the glans and discharge their contents into the prepu-

tial sac, augmenting the irritation, hence the swelling and the stenosis. Thus our vicious circle once established will continue until relieved by science. The swelling increases and soon there is a discharge of pus from the preputial orifice, and on microscopic examination shows various germs but no genoccocci. As complications of this condition we have the following well known conditions whose pathology needs no amplification here, dorsal lymphangitis, bubonolus, ingunial adenitis, papillomatae, and superficial erosions.

Plate A. Shows method of grasping penis and the scissors blade in the preputial cavity, having just transfixed the foreskin and ready to cut.

A superficial observer may take this condition to be a urethritis with preputial oedema, the pus has the same general physical characteristics and on stripping the penis is forced up from the perifraenular recesses on either side of the fraenum appearing at the meatus, as if it came from the urethra. However, if we clean the preputial cavity thoroughly and then strip penis or have patient urinate we will obtain no pus and so can exclude urethritis.

Symptomatology.—This is usually very simple. Naturally the cardinal sign is inability to retract the prepuce to a position behind the glans penis, it being normal in the congenital cases; red and swollen and infiltrated in the inflammatory types. In infants one of the first things noticed is continual handling, rubbing and scratching of the pubic region. Crying during urination, ballooning of the preputial cavity while urinating, general nervousness, eneuresis, convulsions, hernia, and the local signs of scratching are all included.

In adults they come complaining of inability to retract foreskin rarely. Usually their troubles are of the mild inflammatory type. If they neglect washing, and frequently in spite of careful hygiene, an accumulation of smegma causes a mild balano-posthitis productive of slight uneasiness, itching or burning in the glans and prepuce accompanied by the characteristically disagreeable odor of decomposing smegma or during erection and coitus the prepuce compresses the glans, and causes ejaculation pre cox.

In the inflammatory type there is usually a discharge from the cavity due to infected and sloughing ulcerations or papilloma and simple inflammation of the glans and inner leaf of prepuce.

Diagnosis is very easy by inspection and palpation. In the inflammatory type, if there is reason to suspect ulcerations on the glans or in the inner leaf of prepuce, a careful palpation and noting of any especially tender, infiltrated or sensitive areas will locate them, or if none are present, will show their absence. The prognosis as to comfort and function is poor unless relieved by treatment. The patient is bothered by constantly recurring attacks of balano-posthitis whenever he neglects hygiene. Operative procedures, if thoughtfully done, give excellent therapeutic results.

Treatment—Prophylactic.—Retract babies' prepuce and clean preputial cavity at or shortly after birth and at frequent intervals thereafter, thus preventing adhesions. In adults have them wash preputial cavity once daily and then dust some bland drying powder on glans and in sulcus. In inflammatory types prevent secondary infections by attending promptly and properly to all abrasions, sores and inflammations.

Operative.— 1. Mechanical stretching; 2.

Plate B. Shows penis after incision has been made and suture applied.

Dorsal slit; 3. Lateral incisions; 4. Clamp operation; 5. Roser operation; 6. Skin from shaft of penis; 7. Bloodless cuff operation (author).

Mechanical stretching is a slow, painful and obsolete method of treatment, it requires long continued treatment which is painful, and as its results are imperfect, it should not be used.

Dorsal Slit.—This is the method parexcelence for the treatment of inflammatory phimosis. It gives the maximum amount of drainage with a minimum amount of fresh wounded tissue exposed to the always present infection. It can be done with trifling pain by the transfixion technique and in every way is satisfactory. The old method of inserting a grooved director and cutting on it is painful. Its advantages and disadvantages are so well known it needs no description here.

The transfixion method is to my mind far better than any previously described. Its steps are as follows:

1. General surgical preparation of the patient with irrigation of the preputial cavity and cleansing of the penis.

The only instruments necessary besides the usual scissors forceps, sutures, etc., are a long, sharp-pointed scissors and two small strips of gauze packing for the sulcus on either side.

Technique is divided into four steps or stages: 1. Insertion; 2. Transfixion; 3. Cutting; 4. Dressing.

Grasp penis and insert sharp pointed blade of scissors well lubricated into preputial cavity and pass it back to within ½ cm. of sulcus. Now, be sure that your scissors blade is in the preputial cavity and not in the urethra, also that the glans is out of the path of the proposed incision. Determine this first by keeping close to the prepuce during the insertion of the blade, and second by a careful palpation just before the incision to determine the absence of the glans. If the scissors point is in the urethra when you depress the handle of the instrument and palpate the tissue over the point it will be considerable in amount, while if the point is in the preputial cavity the amount will vary from practically nothing in the cases where the œdema and infiltrate are near the edge of the prepuce, to a considerable amount when it is at or near the sulcus.

In determining the point of transfixion bear in mind the fact that the skin of the penis is loose and you can very easily transfix too far back toward the pubes. So select a point for transfixion just over the sulcus of the glans with the penis in repose and no traction on the skin.

The scissors now being in the preputial cavity and having located accurately the end of the proposed incision, by a quick thrust the scissors blade transfixes the prepuce at that point (Plate A), and by simultaneously closing and elevating them with a rocking motion to prevent the prepuce escaping from the scissors, the cutting part of the operation is completed in much less time than is necessary to describe it, and the prepuce is slit from the point of transfixion to the mucocutaneous junction with only the momentary pain of the thrust, as the remainder of the incision follows so quickly. (Plate B.)

Clamp a severed vessel about the center of each leaf of the prepuce, cleanse the now exposed sac and treat ulcerations, papillomatæ, etc. Apply one per cent cocaine solution at angle of cut and here pass one silk suture to approximate skin and mucosa. Tie clamped vessels and pack sulcus with two narrow gauze strips, beginning at frænum and ending at midline on the dorsum. Now apply wet hot dressings and fix waist band, etc., to hold penis in an upright position or apply no dressing whatsoever but keep organ immersed in a warm boric or permanganate solution continuously.

In the vast majority of cases after the inflammatory symptoms have subsided the pre-

Fig. 1. Shows first incision made and the dissection started.

puce shrinks and is only noticeable as a slight swelling on the under side of the penis. If it does not after the infection is healed, it can be removed in the ordinary way.

The lateral incisions are made in the same manner as a dorsal slit or by special instruments devised to make them both at the same time. They make two cuts where one is sufficient and are not recommended.

CIRCUMCISION.

General Considerations. There are several anatomical points of special interest in the operation of circumcision. First: The organ operated on varies in size from time to time in response to its various functions. This tends to drag on the sutures and in many cases pulls them out entirely. The skin of this region is very thin, elastic, and has a tendency to roll in, which fact necessitates the insertion of the sutures near its border and so predisposes to this accident. Lately I have been using wound clips in place of sutures and they have done excellent work in the few cases in which they were used, obviating this trouble completely. Still there is nothing so fine, when it holds, as a continuous catgut suture close to the edge of the incision and carefully applied. With the suture you can get absolutely accurate coaptation, so the process of healing is accomplished by very few cells.

The tissues of the penis are loose and lack a strong supporting framework, hence there is a tendency to serious extravasation and œdematous swelling after operative procedures. To obviate this a tight bandage around the penis for twenty-four hours after operation and the T arrangement, to elevate the organ so gravity aids in reducing the swelling instead of augmenting it, are used.

The clamp operation and Roser operation with slit up the dorsum are old, well tried methods and need no explanation in this paper.

At first glance, plastic operation on some portion of the shaft of the penis and its replacement by the prepuce seems ideal When you consider that the constriction at the mucocutaneous junction is not removed, and that you cut away skin and replace mucous membrane, which is frequently sore for a considerable time, it does not appear satisfactory. Frequently the defect is compensated by skin from the pubes, and your prepuce is again almost as long as before.

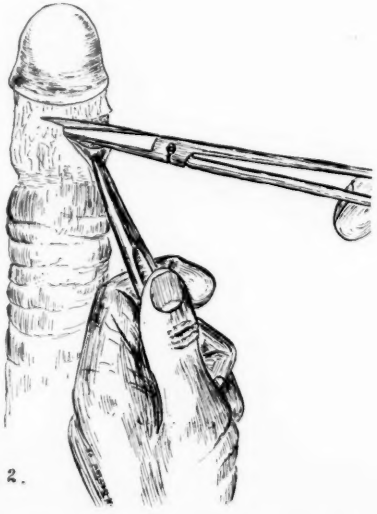


Fig. 2. Shows second incision made and dissection started.

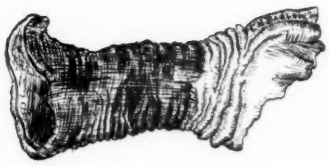


FIGURE 3.

Fig. 3. Shows the removed cuff. The junction of the dark shaded part and the light is the muco-cutaneous junction, the dark being skin and the light mucosa.

Bloodless Cuff Operation. (Author). Points of advantage and distinction:

1. Practically no hemorrhage, as nothing but capillaries are cut.
2. Post operative œdema absent or very slight.
3. No detention from business for an office man. One or two days for active man or laborer.
4. Removes wound a goodly distance from urinary meatus and hence easy to keep it uncontaminated.
5. Cosmetic effect excellent.

Disadvantages:

Not applicable in inflammatory phimosis.
Requires trifle more surgical skill.
Not applicable in infants.

OPERATIVE STEPS.

Incision.—First cut the frænulum from the glans and cut it down till the perifrænular pockets are obliterated and the frænular region is smooth. If the frænulum is thick, it is best to leave a little flap from one of its sides to cover in the defect. If short and thick, leave

FIGURE 4.

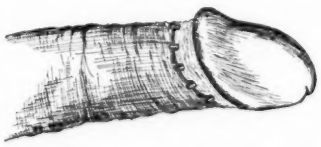


Fig. 4. Shows the operation completed, with clamps used in place of sutures.

the area to granulate, which it does very quickly.

The next incision (Fig. I) is circularly around the shaft of the penis through the skin only and paralleling the sulcus about ½ cm. behind it, being careful to avoid the veins.

Next a similar incision (Fig. II) at an equal distance behind the sulcus and paralleling it through the mucous membrane only, being careful to avoid the veins here also.

When the prepuce cannot be retracted we make the skin incision and start the dissection from it as usual. As we approach the muco-cutaneous junction the stenosis is relieved and we can retract the prepuce, make our mucous membrane incision and continue as ordinarily.

Fig. 5. Shows the dressing completed, and manner of elevating penis.

Dissection.—Catch the distal edge of the skin incision and dissect it off from the fascia, keeping very close to the skin here. It is a matter of no consequence if the skin is nicked, while it is a serious slip if some of the large veins are snipped. Continue so to the muco-cutaneous junction, then retract prepuce and start your dissection anew on the proximal side of the mucous membrane incision continuing till it meets the skin incision. Slip the cuff (Fig. III) off the penis and the cutting part of the operation is completed. If your inci-

sions have been properly placed the two cut edges lie accurately fitted to each other and only need to be sutured.

Suturing.—In carrying out this part of the operation the tendency of the skin is to in-roll. To obviate this we have two methods at our disposal. First, a continuous suture of absorbable material placed very close to the edge of the incision. Second, an interrupted suture of a stiff, non-yielding character, as silkworm-gut, placed far back and ends cut long, thus preventing in-rolling by its stiffness and bridging action; or the elevation of the cut edges like the sides of a tent with a suture clamp to hold them in place. (Fig. IV.)

Dressing.—This to my mind is one of the very essential steps in the operation. A gauze strip about nine inches long and 1 cm. wide is wrapped very tight around the penis and covering the wound. Do not be afraid to apply this too tight; usually it is not drawn snug enough. What is desired is pressure to limit oozing and œdema. Over the gauze apply a narrow and snugly fitting bandage.

Pass a large bandage around waist and from this drop a T down to penis, having this T four inches wide, at least, and long enough to reach to the scrotum. Place penis upright against the abdomen and so regulate the T that it will retain it there. (See Fig. V.)

Cover the glans with a piece of gauze heavily smeared with zinc salve or sterile vaseline and instruct patient to replace it after each urination.

Instructions to Patient.—If the glans swells and pains because of the constriction of the dressing, gentle firm pressure with the thumb and index finger will reduce it and quiet the discomfort. Impress upon him that the dressing must be changed in twenty-four, or at the most thirty hours. The gauze strip must be removed or markedly loosened by that time, its function of limiting œdema and serious extravasation having been fulfilled and further action would be harmful, possibly causing gangrene.

Explain to him that the function of the waist band and T is to hold the penis upright against the abdomen, and after each urination it should be slung up as before.

After Treatment.—Dress the same as any ordinary wound but elevate penis each time.

WHEN PROSTATOTOMY INSTEAD OF PROSTATECTOMY IS INDICATED[1]

By CHARLES E. BARNETT, M.D.,
Professor of Genito-Urinary Surgery, and Surgical Anatomy, Fort Wayne College of Medicine

IN this day and time, when the ambitious surgeon is anxious to enlarge his prostatectomy-table and to obliterate its mortality-list, I think it not untimely to call attention to the fact that I believe there are certain few cases that indicate prostatotomy [2] rather than prostatectomy, and while our text-books pass prostatotomy with a mere trivial notice, I believe with *this few* a profundity of argument should have been used.

On reviewing the literature covering over two thousand eight hundred prostatic cases operated, I find the mortality list a little over eleven per cent, with the perineal route the least morbid of all.

Uremia, sepsis, hemorrhage, shock, and pulmonary complications could be classed as the prime factors in the causes of death, and of these five, shock and pulmonary complications could be included with uremia, so we would really have but three, and from these three causes uremia is by far the most frequent.

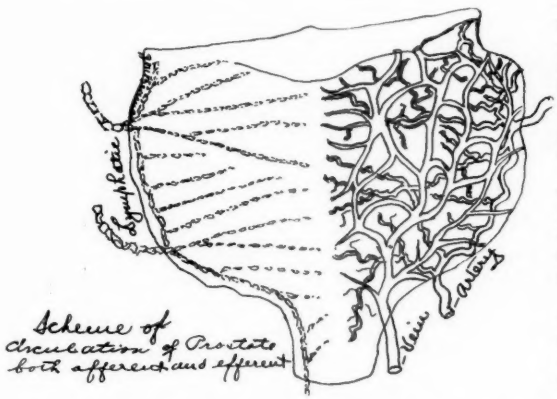
Without the bladder, ureters, kidneys,—in fact, the whole economies being water-logged,

[2] The word "prostatotomy," in this article, has reference to the perineal cystotomy incision, and does not refer to the Bottini-Freudenburg, Young, Wishard, Chetwood galvano-cautery incision.

[1] Read before the Mississippi Valley Medical Society, 1905.

as it were, with toxic material,—I would consider prostatectomy practically devoid of danger; but where we have marked disability, albuminuria, casts, etc., I would consider a palliative operation (prostatotomy) indicated, and after the drainage had relieved the body of its poison, a prostatectomy could be done at a second sitting, if necessity demanded, with the danger-signal much lower.

So great is the temptation after you get your finger on the prostate, that it requires more courage not to remove the prostate, during a prostatotomy, than to do a prostatectomy.



Operative recovery from prostatotomy, compared to prostatectomy, is all out of proportion, when you consider the slight difference in the traumatism done.

The reason that Celsus could do a successful prostatotomy so early in surgical history (*Cystotomy* — perineal — for stone 100 B. C.) was, in my opinion, because he entered the bladder through a mesial perineal incision, thereby minimizing the disturbance to the circulation (arterial, venous, and lymphatic), both afferent and efferent.

A study of the anatomy of this part shows the arteries joining their fellows in this region by way of the smallest anastomotic branches; the venous plexus dividing most particularly in the median line, and the lymphatics advancing laterally, forward and upward, to join their nodes under the pubo-prostatic fascia on their way to the internal iliac glands. (See cut).

Anesthesia merely adds its weight to the tiny thread that is holding the body together, and while the length of time is somewhat of a factor, yet, in the cases I have to report, I am sure I could not have told in which case the anesthetic was prolonged. A more thorough trial of our new anesthetic — scopolamine hydrobromate — will tell us whether or no the anesthetic dangers in these cases will be lessened.

A report of three cases will help to show the reason of my contention that there are a certain limited number of cases that are too far gone for prostatectomy, while prostatotomy will give results far beyond expectations.

CASE 1. June 18, 1897; age 46; married; family of children; gave history of gonorrhœa two years ago, with stricture formation; retention had occurred several times previous to my service upon him. Found him in terrible distress of retention, milking a few drops of bloody urine from penis. Introduced No. 20 F. sound with great difficulty through membranous urethra and prostatic urethra, after which he was catheterized and sent to the hospital.

Prostatotomy was done in median line with rubber-tube drainage. Discharged from hospital with perfect operative recovery. Consulted me, for first time since operation, last February, at which time I found a urethral calculus; with that exception, health was good; have not seen him since.

CASE 2. December 22, 1904, O. D. T. Gave me the following history: Gonorrhœa eighteen years ago; lasted three months; married two years after; wife soon died from peritonitis (likely ruptured pus-tube); chancroid one year ago, with right suppurative adanitis, urethra began discharging freely three months ago, with a continuance for two months; retention had occurred three times in two days. On examination I found three strictures in anterior canal; one in posterior; passed No. 22 F. with difficulty throughout posterior stricture. He was catheterized—retention being present at this time—and bladder washed. Rectal examination showed me the left lobe of prostate three times too large; right, two times. Prostate quite hard, but not markedly inflamed; pain in lumbar region when straining from retention.

URINALYSIS

December 22, 1904

Microscopical	Casts.
Bacteriological	Diplococcus of Neisser.
Specific gravity	1014.
Reaction	Acid +.
Albumin	Yes +.

(Confirmed by two other bacteriologists.)

Returned to his home, where he necessitated the services of his family physician twice during the twenty-four hours he remained there. On the 24th, returned to the city and entered hospital for treatment. January 23d, patient was feeling sufficiently improved to want to go home. January 4th, retention occurred again, and the next day he was operated upon.

Did perineal cystotomy (prostatotomy) in median line; sounded bladder for stone, but found none. Prostate fibrous; vesical ring pronounced; no vessels ligated; hemorrhage slight; adrinalin used; single-tube drain No. 20 put in. Patient took ether badly.

Post-operative recovery was remarkably free from storms; urinalysis revealed no pathology at time of his discharge from hospital, which occurred January 26th.

Patient at the present time is motorman on street-car, and reports his health as being entirely normal.

CASE 3. E. S. was referred to me by Dr. Ringle, of Tippecanoe, Indiana, the 20th of last June. The following history I took from him at hospital: Age 64; married; six children; served three years in Civil War; absolutely denies gonorrhœal infection during that time or afterward (I believed his statement); bladder troubled him some after his return from army, and has continued with gradual increased severity until five years ago, when a catether was used, with infection following; bedfast for most of the year; during this time micturition occurred during some of the nights, every ten minutes; alarming retention occurred five weeks ago. I found him in bad shape. Introduced double curved prostatic sound, both for sounding canal and bladder. Did not have the least inference of a "click." Rectal examination revealed both lateral lobes of prostate reaching higher than my examining finger. Pain in bladder, especially marked about trigone, distressed him constantly.

URINALYSIS

June 23, 1905

Specific gravity	1017.
Reaction	Alkaline +.
Sugar	No.
Albumin	Yes +.
Microscopical — Cells	Vesicle epithelialium.
	Pus.
Casts	Granular.
	Hyalene.
Bacteriological	Streptococci and micrococci.

General treatment, with bladder-washing and hip-elevation, gave him no benefit. A pulmonary hemorrhage on the evening of the 24th decided me that an immediate operation with bladder drainage would be the only chance to abort dissolution. So, about midnight a prostatotomy was done, and upon entering the bladder, despite the fact that sounding had failed to discover it, a large phosphatic calculus (uric acid nucleus) was found occupying the left prostatic sulcus, the largeness of the gland likely preventing contact with sound. Stone was removed by piecemeal with stone-forceps. Hemorrhage controlled by adrinalin irrigation. Drained with No. 20 velvet-eye rubber tube. Returned patient to bed, elevated at head to highest degree possible. Post-operative recovery admirable. Albumin continued in urine up to July 28th, since which time none can be detected.

I ordered him in for examination September 15th. Found left lobe of prostate seemingly normal in size; right, one third too large. Able to retain his urine throughout the whole night, and describes himself to me as being altogether satisfied over his improved condition.

In citing these cases I am not trying to infer that they may not need a future prostatectomy. The point that I am endeavoring to make is, that some of the cases that go to make up the morbidity-list might be saved with a prostatotomy instead of a prostatectomy.

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NOVEMBER, 1905

BANQUET FOR NICHOLAS SENN

It has been announced that a testimonial banquet is to be given in honor of Professor Nicholas Senn in Chicago, by the medical profession, on the evening of November 11th.

The medical profession of the entire country, and especially those of the Middle West, should feel grateful for this opportunity to pay homage to one of the world's greatest teachers of the science and art of surgery.

Only those who began the study of surgery in pre-antiseptic days, and were familiar with the early work of this great teacher, can fully realize the influence he exerted. To him, and to the memory of Christian Fenger, is due a great debt of gratitude for the conspicuous part they played in the development of modern surgery.

The selection of the medical profession as a life's work may have been with Dr. Senn a matter of chance or mere accident; but, no matter what vocation he might have chosen, the highest degree of success attainable would, as now, have been his. He was born a leader, and would have been in the advance guard in any field of human activity. He has been aptly called the "Napoleon of surgery."

Dr. Senn was born in Buchs, canton of St. Gall, Switzerland, in 1844. In 1853 he came to this country with his parents, settling on a farm in Wisconsin, a few miles south of Fond du Lac. In early life he attended a private grammar school in Fond du Lac, conducted by a Mrs. Pooler, where was laid the foundation of a liberal education. Endowed with an indomitable energy and an untiring ambition to learn, whatever he attempted was completed to the fullest degree. Blessed with a brain and body of the most rugged type, he posessed a power of physical endurance that enabled him to overcome obstacles and drawbacks that would have completely discourged most young men. His capacity for work has always been simply phenomenal, and his life exemplifies the words of the immortal Goethe, that genius is only the synonym of work.

While obtaining his preliminary education, a period of time was spent working as a druggist's clerk. The study of medicinal plants developed in him the taste for the science of botany. Characteristic of the man who was to attain such eminence in medicine, he did not rest until he had mastered general botany. For many years he kept up the study as a recreation, and is to-day as fond of it as ever.

Dr. Senn received his degree in medicine from the Chicago Medical College in 1868, and, following this, served an interneship

in Cook County Hospital. After this service he returned to the hamlet of Ashford, Wisconsin, where his parents resided, and began the arduous work of a country doctor. Into this work he put the same energy that has characterized his work through life. He rode almost night and day over a large territory, and yet found a few hours each day for study and research. He has never had sympathy for those who excuse themselves from work on the ground of lack of time.

In 1873 he moved to Milwaukee and established himself as a general practitioner. His taste and natural aptitude for surgery, however, soon took form, and he rapidly came to the front as a surgeon. In the later seventies he went to Munich, placing himself under the immediate tutorship of the celebrated Nussbaum. He was among the first American students to return to this country in possession of a medical degree granted by a German university.

It was after his return to Milwaukee that the real genius of the man was made known. He began and carried out a long series of experiments upon lower animals, that revolutionized old principles and gave abdominal surgery the groundwork upon which rests the great superstructure of our work to-day. He gave to the work an impetus that had never before been known, and which wielded its influence in every corner of the world where surgery was practiced.

The knowledge evolved from his experimental work and writings upon gun-shot wounds of the abdomen has saved thousands of human lives, and if he had done nothing more, this work should make his name live as long as there is a history of surgery. His experimental work on fracture of the neck of the femur placed the treatment upon a sound surgical basis. His statements in regard to his results in this fracture were questioned by Professor David Gross, who afterward gladly admitted their truth. His experiments in air embolism, and the surgery of the pancreas, intestinal suture, as well as much other work, have placed us under obligations to him that can never be discharged. All this work, done so many years ago, made him the first American surgeon to receive full recognition by the profession of Europe. His contributions to surgical literature have been voluminous and exhaustive. A subject taken up by him has always been finished.

Well-deserved honors have been showered upon him in all parts of the world in profusion. Let us, therefore, in partial recognition of what he has done for the surgery of our country, and for the world, show our appreciation by responding to this call to do him honor.

CHARLES W. OVIATT, M. D.

TRANSACTIONS OF SOCIETIES

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

THIRTY-FIRST ANNUAL MEETING, HELD AT INDIANAPOLIS, INDIANA, OCTOBER 10, 11, AND 12, 1905

PROCEEDINGS OF THE SURGICAL SECTION

The President, DR. BRANSFORD LEWIS, of St. Louis, Missouri, in the chair.

The first paper read was by DR. CARL E. BLACK, of Jacksonville, Illinois, entitled

SURGICAL DRESSINGS

The author presented a preliminary report on the technic of the after-dressing of surgical cases, and pointed out briefly the principal elements necessary for the proper dressing of a wound, whether it be a surgical or an accidental wound. While the technic differed somewhat in different kinds of wounds, he said the fundamental principles were the same in all. Such a consideration divided itself into,—1. The patient. Certain modifications must always be made to suit the individual case. 2. Those things which were auxiliary to the dressing itself, but which did not come in contact with the wound. 3. The surgeon or nurse making the dressing, and his or her assistant. 4. The instruments, dressings, and solutions coming in contact with the wound.

Septic wounds should be so dressed that there shall be no opportunity for a further mixture of infection in the wound, or any opportunity for the infectious material from the wound to in any way be scattered where it could come in contact with other wounds. These two points should always be the basic principles of a surgical dressing, and should always be kept prominently in mind by those undertaking the dressing of wounds. To facilitate dressings and to economize in materials, and at the same time carry out a thorough technic, the author had arranged, and had been using for some time, a plan which had proved quite satisfactory. This plan consisted of a box devised by him, which contained everything that might come in contact with the wound, and everything, excepting the instruments, could be purchased in ordinary stores of towns, and were not expensive.

DISCUSSION

DR. JOHN YOUNG BROWN, of St. Louis, Missouri, thought the secret of success of the essayist in dressing wounds was due largely to the thorough system he had inaugurated. System in surgery, as in business, was everything.

DR. O. H. ELBRECHT, of St. Louis, Missouri, said the sooner surgeons reached a standard in the sizes of dressings, in tapes, squares, oblongs, etc., the less confusion there would be on the part of the surgeon in going from one hospital to another to do surgical work. He mentioned the plan adopted by him at the hospital with which he was connected.

DR. C. E. RUTH, of Keokuk, Iowa, said that the sooner the profession came to a realization of the needs pointed out by the essayist, the less confusion there would be, as well as lessening very materially the liability to infection.

DR. MILES F. PORTER, of Fort Wayne, Indiana, said the keynote of success in the management of surgical cases was system and simplicity. One should attempt to do away with the necessity of dressing wounds until they were healed, in all cases where this was possible. The essayist spoke of there being no necessity for dressing an aseptic wound until the stitches had been removed. The speaker said there should be no stitches to remove in the ordinary aseptic wound, no matter where its location, and in the ordinary treatment of septic cases the rule, as it now prevailed, in his judgment, made necessary a great deal more subsequent dressing than was called for. The dressing of a wound after it was made should be looked upon as an evil to be avoided as far as possible. This point was illustrated by the citation of cases.

DR. BLACK, in closing, said that the gist of the whole matter was system, for the purpose of saving time, safety to the patient, and for the purpose of economy.

CURETTAGE IN SEPTIC CASES

DR. C. E. RUTH, of Keokuk, Iowa, stated that prevention must always be the most important treatment, and must always include hygienic asepsis of the patient and physician, and great care in examination. No instrumentation in any variety of puerperal sepsis should be considered which denuded the uterine mucosa and opened up tissues not in any sense protected from septic infection, the ut-

most gentleness being used to avoid any possibility of puncturing the softened or disintegrated uterine wall. The curette should never be used in such cases, certainly not a small or sharp one, and then only in the least serious of these cases; namely, saprophytic intoxication, which was not sepsis. He had for many years been satisfied with a placental detacher of his own device, which answered every purpose, with a minimum of danger of perforation of the uterus. Streptococcic and staphylococcic infections were the most serious of puerperal infections, as these, on the manifestation of symptoms, passed beyond all possible reach of removal by any form of curettage. While curettement could do no good, it might do much harm in disseminating infection and in causing uterine perforation. Within the last two and a half years the author had operated upon four cases of puerperal sepsis which illustrated the dangers of curettage. These cases were reported in detail.

DISCUSSION

Dr. O. H. Elbrecht thought that many deaths were due to the curette being used in cases of septic uteri. It was just as criminal, in his judgment, to introduce a curette into a septic or infected uterus as it was a sound or curette for the purpose of producing criminal abortion. He mentioned one case in which a physician curetted a uterus contrary to his advice, and the next day the patient died. He mentioned two other cases of sepsis that terminated fatally from what he believed to be curettement of the uterus.

Dr. H. O. Walker, of Detroit, Michigan, said the paper was timely, and one could not condemn too strongly the indiscriminate use of intrauterine curettes and irrigators. Many deaths were undoubtedly due to the indiscriminate use of these instruments.

Dr. John Young Brown said that while the indiscriminate use of the curette was dangerous, it nevertheless had an important function to fulfill. Where there were decomposing membranes or fragments of retained placenta, the uterus should be cleaned out.

Dr. Hannah M. Graham, of Indianapolis, Indiana, related her experience in treating the class of cases under discussion. She used an applicator, and not a sharp or dull curette. Cotton was wrapped around the applicator, saturated with carbolic acid, and the *débris* left in the uterus was swabbed out. It was her practice, too, to use a fenestrated catheter in some cases as a drainage-tube, through which peroxide of hydrogen was injected every two to three hours, either by herself or the nurse, and she had had excellent results by this method.

Dr. A. M. Hayden, of Evansville, Indiana, concurred in the remarks of Dr. Brown. When a physician was called to see a patient whose uterus contained a broken-down fetus or fragments of placenta, if he failed to clean out that uterus he thought he was criminally negligent. Patients went on for weeks with elevation of temperature due to sepsis, and would not get well without the judicious use of the curette, while if the uterus was cleaned out the patients would recover in a short time. He advocated the use of placental forceps for removing *débris* or pieces of retained placenta without disturbing or breaking down nature's protection.

Dr. Thomas B. Noble, of Indianapolis, Indiana, defended the use of the uterine curette, saying it was an instrument for prevention as well as cure. The proper way was to interpret the pathology that one had to contend with, remembering that the uterus was a means to an end. If a woman was suffering from high temperature, rapid pulse, prostration, due to saprophytic material in the uterus, which could be removed by mechanical means, the physician did her an injustice if he left the uterus alone, simply trusting to the *vis medicatrix naturæ* to take care of it.

Dr. G. Frank Lydston, of Chicago, said he did not believe that the essayist, nor those who spoke so emphatically in condemnation of the curette, would fail to differentiate between the post-abortive septic phenomena met with and the post-puerperal septic phenomena. He did not believe that any of the gentlemen intended to convey the idea that the curette was to be condemned and never to be used. If one were called to see a woman who was suffering from general sapremia, and had been for several weeks, who was in such a condition that it was evident dissolution was not far away if something was not done,—if the history was such that material had been left behind in the uterus, and she was having a temperature of 106°,—one would certainly not treat such a woman surgically or provide drainage by way of the vagina through the medium of vaginal irrigation, but would remove the septic material from the uterus. If this were not done, the outlook for the patient was ominous, and many women in such a condition recovered under proper intrauterine treatment.

Dr. A. H. Ferguson, of Chicago, stated that the last case he lost sleep over was one of this nature—an abortion, not criminal. The woman had been pregnant seven weeks. She was having a hemorrhage from the uterus. A physician was sent for. He made a vaginal examination, found the cervix dilated and membranes slightly protruding. This physician introduced his finger and tore everything away. Before he did this the woman had a tem-

perature of 99°. She had had a nurse before the physician got there. Immediately after this, or within an hour, possibly, she had a chill, her temperature rose to 105°, simply from the use of the finger. Then another physician was called in consultation. The uterus was curetted, but it was found that everything in the way of *débris* had been removed by the finger of the previous physician. Patient's temperature went up to 106½°. After this the speaker was sent for to do a hysterectomy. There was no peritonitis; there was no enlargement on either side; there were fetid discharges, but no vaginal irrigation had been resorted to. He simply directed vaginal irrigation with mild antiseptics, with liberal doses of whisky, and the next morning the woman's temperature declined to 102°. In questioning the physician, he found out that the vulva had not been properly cleansed—in fact, it had not been cleansed at all. The vagina had not been irrigated. No speculum had been used to disinfect the area where an abrasion was made by the finger. No precautions had been taken. He had gone through the period of curetting the cases under discussion in his early practice, and when the operation was properly done, in the hands of careful men the curette had a place, but one should always bear in mind that a greater majority of women were harmed by the curette than benefited.

Dr. Ruth, in closing, said he thought a good deal of the discussion had arisen from a misunderstanding or failure to differentiate between the different varieties of infection that one had to deal with. There was practically little or no danger from a careful curettement in a case of putrescent uterus in which there was not added to the intoxication, or sapremia, a septicemia.

Artificial Hyperemia in Surgery

Dr. Alexander C. Wiener, of Chicago, pointed out the indications for this method of treatment in surgery, as follows: 1. Subacute, mild inflammation of joints and soft tissues were relieved rapidly. 2. Acute purulent inflammations of soft tissues, either on the extremities or the head. 3. Acute and subacute inflammations of joints and purulent arthritis; gonorrhœal infection of joints.

In these cases the elastic bandage had to be applied in such a manner as to produce energetic venous stasis without causing pain to the sufferer. In acute inflammations comparatively light constriction produced an immense hyperemia. This conclusively showed that the arterial blood was not diminished, but slackened. Cases were cited in which excellent results were obtained following the Bier method.

Surgery of the Gall-bladder and its Ducts.

Dr. H. O. Walker, of Detroit, Michigan, related his experience with 185 cases upon which he had operated. He quoted from a former paper written by him several years ago, saying that much of what he had said then would hold good to-day. 1. Jaundice, which heretofore was regarded as almost pathognomonic of the presence of gall-stones, was present in only about twenty per cent of all stone cases. 2. That pain in the region of the gall-bladder did not by any means indicate the presence of gall-stones, but was quite as often the result of a kinking of the cystic duct from lesions, the result of one or more attacks of cholecystitis combined with pericholecystitis. 3. The passage of stones in the feces was not as common as was formerly supposed, for colics were rarely successful in passing a stone from the gall-bladder. 4. Empyema of the gall-bladder was not always felt by palpation, for frequent attacks of cholecystitis tended to diminish the size of the gall-bladder. 5. Tumors of the gall-bladder without pain or jaundice indicated a simple dropsy, while a painful, distended gall-bladder indicated empyema, and when accompanied by jaundice indicated constriction of the choledochus. 6. A hard, nodular, painful tumor of the gall-bladder, with or without jaundice, was almost certain evidence of carcinoma. 7. Obstruction of the choledochus, accompanied with inflammation and jaundice, quickly disappeared after the passage of the stones into the papilla of the duodenum.

Cholelithiasis was of greater frequency than was supposed. Approximately, every tenth individual had concretions in the gall-bladder, yet only about one in twenty ever complained of their presence, so that quiet stones needed no treatment. It was only the cholecystitis and cholangitis which made manifest the irritable presence of gall-stones without demanding treatment, either medicinal or surgical.

The conditions that required operative intervention were: 1. An acute sero-purulent cholecystitis, and accompaning pericholecystitis. 2. Persistent and frequent pains due to adhesions between the gall-bladder, intestines, stomach, and omentum. 3. Chronic obstruction of the common duct. 4. Chronic empyema of the gall-bladder and its accompanying accidents.

Cholecystectomy was undoubtedly advisable where the gall-bladder had been subject to frequent attacks of inflammation, and where chronic septic conditions existed.

The author reported an interesting case in which he removed the gall-bladder and fixed the right kidney.

DISCUSSION

DR. ALEXANDER HUGH FERGUSON stated that not infrequently a patient would give a history of an old appendicitis, followed by adhesions which persisted around the gall-bladder, causing pains and symptoms in that region afterwards. So commonly were these two conditions associated together, that he hardly ever now opened a patient's abdomen for the one condition without at least looking for the other. The adhesions which formed from infection from the duodenum and stomach almost invariably caused some displacement of the gall-bladder. These adhesions were caused from external infection, and not originally from within the gall-bladder. Under these conditions the gall-bladder might be kinked, doubled upon itself, with no gall-stones. The gall-bladder might be simply flexed upon itself, giving rise to the symptoms and signs of gall-stones in the gall-bladder. In order to detect the exact position of the gall-bladder while operating, he had been in the habit of raising up the abdominal wall and looking in, and in this way he had detected two cases of flexion of the gall-bladder. All that was necessary to cure these patients was to straighten the gall-bladder and drain it. This was done.

There was one condition he had encountered several times which caused symptoms, accompanied with hepatic colic and slight jaundice, and this was descent and rotation of the liver, kinking of the cystic ducts, the pylorous pressing upon the large bowel. To cure this case he took the round ligament and suspended it to the liver. He mentioned other similar cases.

DR. W. D. HAGGARD, of Nashville, Tennessee, said that the statements of the essayist regarding the small percentage of cases in which jaundice appeared as a symptom coincided with the statistics of Murphy; namely, that in eight per cent of all gall-stone cases jaundice was absent.

In reference to non-calculous cholecystitis, he had had some experience with that class, and he explained it on three grounds. The first group of cases were mistaken diagnosis; the second were similar to those Dr. Ferguson had referred to. He operated on a woman, 34 years of age, who had intense biliary colics for a period of three weeks. These spells were so severe that it was necessary to give large doses of morphia for relief. She had previously had her appendix removed, and, very much to the speaker's chagrin, he found no gall-stones at the operation, but, draining the gall-bladder and fixing it up, had cured her entirely. He thought this was a case of flexion of the gall-bladder, although he could not say definitely.

DR. WALKER, in closing, said the presence of gall-stones was a pathological condition, and these stones had their origin, as far as was known, from bacterial invasion. Although there was not a great amount of pain in some cases, yet there was a certain amount of trouble, and he thought it ought not to be a difficult thing to make a diagnosis. If a patient had gall-stones, by proper manipulation one could determine their presence, and when there were other symptoms present, it was wise to remove them and relieve the patient of symptoms of gastralgia, dyspepsia, etc.

RETROPERITONEAL TERATOMA

DR. C. M. NICHOLSON, of St. Louis, Missouri, read a paper on this subject. The tumor described was a teratoma of the abdominal cavity, remarkable not only because of its rare occurrence, rapid growth, and total absence of symptoms until three weeks before deaths, but because with its substance had been found a chorio-epithelioma. The following is a report of the author's case:

August 5, 1905, he was consulted by C. W., a healthy-looking, well-developed young man, 21 years of age, who complained of one symptom,—fainting,—which had occurred twice during the preceding week. He had attended to his business until August 4th, when he quit work, fearing an accident during his trips, as superintendent, down into the mine. Upon inspection, the abdomen appeared normal; pressure over the region of the gall-bladder enabled the examining finger to outline a pear-shaped body. In the median line beneath the rectus abdominis, extending from a point four inches above the pubes to the lower margin of the right lobe of the liver, was an immovable mass of definite form. The line of dullness was continuous between the pear-shaped body and the mass in the median line. Although the growth measured four inches in width, no intestinal disturbance had resulted. Three weeks later, the patient vomited, and complained of greater pain after eating. The vomiting became more frequent and the pain more severe with each succeeding day. He saw the patient September 3d, and the following morning made an exploratory incision, revealing a growth extending from the right kidney to the last dorsal vertebra, thence downward to within two inches of the pubes. It was firmly attached to the median line posteriorly and to the kidney externally. The posterior peritoneum was cut through and the mass found to be inclosed in a fibrous capsule, which was sewed to the anterior layer of the peritoneum and a portion of the growth removed. The patient sat up at the end of the first week, but continued to complain of great pain. He died two weeks after the operation.

Post-mortem examination was made by his assistant, Dr. S. S. Stahl, whose report, in part, was as follows: "On opening the cavity of the abdomen and cutting through the posterior peritoneum and fascia transversalis, a fibrous capsule inclosing a semi-solid mass, and adherent only in the median line and to the right kidney, was found. Not without much difficulty could the tumor be removed, so intimately was it attached to the structure anterior to the vertebral column. The abdominal aorta from the first dorsal vertebra to the fourth lumbar was closely attached to the growth. The gall-bladder was distended, evidently due to pressure on the common duct. Neither the lumbar glands nor the kidneys were enlarged, although the right kidney was adherent to the tumor. The liver, though very slightly enlarged, showed evidence of involvement. The heart and pericardium were normal. The lungs contained two or three hundred nodules."

The tumor weighed a little less than two pounds. It was right-angled and lobulated, the lobules being smooth and extending in different directions. On cutting, the tumor was soft, the anterior inferior extremity being partially cystic. Some of the cysts were as large as a hazelnut. The remainder of the growth appeared solid. The outer surface of the tumor was covered with a distinct fibrous capsule. Paraffin section of the Zenker fixed tissue showed a very complicated mass. Portions of organs were found corresponding in embryonic origin to all the germinal layers. Skin, cutaneous organs, central nervous system, peripheral nerves, represented the epiblast. Mucous glands, tubes, cysts with epithelial lining, were indicative of the hypoblast. Bone, cartilage, and fibrous tissue constituted the mesoblastic structures.

The author considered at length the different theories advanced in the past to account for the origin of teratomata.

DISCUSSION

Dr. Joseph Rilus Eastman, of Indianapolis, Indiana, said he had had a remarkable experience in relation to tumors of this character, in that he had encountered cases of precoccygeal teratomata, but he had not had such a case as the one related by the essayist. The speaker's cases were instances of precoccygeal teratomata; they were not cases of inclusio fetalis, such as he thought Dr. Nicholson's case was. In the first there was presented the clinical picture of a complete external fistula in ano. Long hairs protruded from both orifices; but when the roof of the canal was split up, it developed that there was quite a cavernous space there which was lined with epithelial membrane, and this proved to be in either case a precoccygeal teratoma or dermoid.

Dr. Eastman related a case in which his father, the late Dr. Joseph Eastman, had removed almost a complete skeleton from the abdominal musculature of a middle-aged man.

Dr. Nicholson, in closing, stated that chorio-epithelioma occurring in a case of retroperitoneal teratoma was exceedingly rare, and, so far as a search of the literature was concerned, he had not been able to find a similar instance. Examination of the microscopic slides demonstrated clearly the presence of tissues from the three germinal layers.

Some of the Fallacies in the Clinical Diagnosis of Gonorrhœa

Dr. G. Frank Lydston, of Chicago, discussed some of the more dangerous of the fallacies in the diagnosis of gonorrhœa, with especial reference to prognosis as regards the infectiousness of a given individual to other and healthy persons with whom he or she might come in sexual contact. He considered, first, the possibility of excluding infectiousness in the case of a woman under suspicion, or who was known to have had gonorrhœa. That the most dangerous type of infection of the female was that in which the external manifestations of the disease were absent or wanting, was coming to be well understood by both gynecological and genito-urinary specialists. The explanation of the relatively great danger of infection of others by such subjects was not so thoroughly understood as it should be. Gonorrhœal urethritis in the female, when it had assumed the chronic form, might present no secretion whatever upon external examination. There might be little or no vaginal, cervical, or uterine discharge, and even such as there was might upon examination fail to disclose the micro-organisms of gonorrhœa. A swab or probe passed into the urethra might return perfectly clean. Notwithstanding this apparent lack of infection in the urethra, the mucous glands might be involved, and under the influence of sexual excitement and the mechanical effect of coitus the physiological hypersecretion might convey to the meatus gonococci in abundance. The result was sufficiently obvious.

The author presented clinical facts which would seem to make it impossible for a physician to state in any given case that a woman was free from infection. This was one of the strongest arguments against regulation and medical inspection of prostitutes. He entertained serious objections to the medical profession constituting itself an assurance society for the protection and promulgation of the social evil, but aside from this scruple, there remain-

ed the fact that no reliable system of inspection or examination could be devised.

The author was firmly convinced that in many cases of infection of healthy women by a latent gonorrhœa of the husband, mixed infection was responsible, and the resulting pathological condition in the female was non-specific. Its being non-specific, however, did not preclude the possibility of its becoming very serious.

The author thought that we had no tests at the present time which would enable us to give a positive opinion of the infectiousness of a given case of suspected latent gonorrhœa. As already suggested, the clinical history in many cases was more important than the laboratory study of the case, and a careful combination of both methods of study was always essential. The physician should be as chary of assuming responsibility in advising a gonorrhœic in the matter of matrimony as he should be in advising a syphilitic under similar circumstances.

Dr. W. E. Washburn, of Kewanee, Illinois, exhibited an improved urethrotome.

Irritation of the Bladder

Dr. A. Ravogli, of Cincinnati, Ohio, said that in many abnormal conditions of the genito-urinary organs, and also of the urine itself, this condition came on as a symptom in the form of frequent micturition. This symptom could be produced by a number of intravesical and extravesical affections. In this condition the urination was so increased that it seemed the bladder could not tolerate the presence of urine. In some cases it occurred in the daytime only, in other cases at night, and in severe cases often in the day as well as in the night. The intervals between urination might be two hours, but in some cases the patient urinated every quarter of an hour, or even every five minutes. The patient would lose sleep, waste away, and was scarcely able to attend to his occupation. The urine might be the cause of irritation, on account of its quantity or its qualities. For instance, it might be too concentrated, contain urates, phosphates, sugar, etc., which maintained or kept up vesical irritation. The bladder itself might be the cause, on account of a hyperemic condition. This hyperemia might be the result of vesical and of extravesical troubles, as phimosis, urethritis, prostatitis, neoplasms, pericystitis, vulvitis, nephrolithiasis, etc. In other cases it was a pure neurosis, the consequence of epilepsy, hysteria, eclampsia. Since the urethroscope and cystoscope had been used, cases of irritation of the bladder without pathological conditions had greatly diminished, and in most of them there had been found either granulations or hyperemia of the mucous membrane. He said there were two kinds of irritation of the bladder,—one which was a local neurosis, and the other which resulted from pathological alterations of the bladder or of the urethra. The affection was a stubborn one, but the detection of the causes would help materially in selecting appropriate treatment.

Prostatectomy

Dr. W. D. Haines, of Cincinnati, Ohio, said that two patients, aged respectively 42 and 59 years, with small indurated prostate with obstruction, occurring in his practice, did well after perineal section and the removal of the gland, in that the catheter was abandoned and a troublesome cystitis relieved. One of the patients suffered incontinence for a period of three months after operation, and the cure was incomplete, as residual urine was found in both cases, and this despite easy bladder access by the sound or catheter.

The author condemned the use of metallic instruments in prostatics for diagnostic purposes, or for the relief of urinary retention, as the danger of perforation and infection far outweighed the meager information or temporary relief thus obtained.

He said one could confidently hope for complete cure in 30 per cent of the cases submitted to prostatectomy; namely, release from catheter bondage, relief from bladder complications, and restoration of urinary function. In his experience with perineal prostatectomy, seven cases had been functionally cured, nine showed residual urine, some of whom had had attacks of cystitis and dribbling, and five of these were suffering from incontinence six months to one year and a half after operation; two cases required secondary operation, one for stone and one for perineal fistula,—making a total of sixteen cases, with ages ranging from 42 to 79 years, without mortality. While these results were far from ideal, the unfavorable physical condition present in the majority of them would in a measure militate against criticism as to the final outcome of this series.

Discussion

Dr. Henry J. Scherck, of St. Louis, Missouri, did not believe that any operation was performed less classically than that of prostatectomy through a median small incision, described by the essayist. In the majority of cases he thought the prostate could not be brought down and the capsule opened by the introduction of a guide, as described. There were several retractors on the market to-day which facilitated materially in bringing the prostate down into the incision. The one he used, devised by Dr. Lydston, had answered his purpose admirably, and he thought it was far superior to any instru-

ment, such as a guide or sound. He did not agree with the essayist that it was a good plan to open the urethra, as suggested, as an incision answered the purpose better. Furthermore, he doubted the possibility of doing this. As to the percentage of results, one ought to expect fifty per cent or more cures without considering selected cases. An incision which the speaker preferred was one which gave plenty of room and allowed him to dissect the parts freely. He believed the cross or elliptical incision was preferable to a straight median incision.

Dr. G. Frank Lydston, of Chicago, said, with reference to the relative superiority of the perineal and suprapubic incisions, it was an old saying that one worked best with the methods with which he was familiar, and while he thought that the perineal method was ideal, at the same time, were he to have his choice between perineal prostatectomy in the hands of a man of limited experience, and suprapubic prostatectomy in the hands of such men as Reginald Harrison and others, he would select the suprapubic operation. Aside from that, there were certain cases in which the suprapubic operation was the safer of the two. Dr. Lydston referred to the great difficulty of removing fibrous prostates by the perineal route.

Dr. Joseph Rilus Eastman, of Indianapolis, Indiana, thought that the careless use of retractors in the performance of operation for the removal of the prostate was responsible for a large percentage of the cases of fistula which followed the operation of prostatectomy. He called attention to the fact that Dr. Charles H. Mayo did not use any retractor. In one case the speaker produced a fistula by the too forcible application of the retractors to widen his wound.

As to the use of gauze packing, one should be very cautious about packing a wound with gauze after prostatectomy, or he would produce a fistula in a certain percentage of cases.

Dr. Horace J. Whitacre, of Cincinnati, Ohio, called attention to the difficulty encountered in removing fibrous prostates. He had operated on the prostate gland three times in the last summer, one of the cases being tubercular, the other two being of a simple nature.

Dr. Robert Carothers, of Cincinnati, Ohio, said that a surgeon with a long left forefinger could do more than he could with many of the instruments that were used.

Dr. E. B. Smith, of Detroit, Michigan, emphasized the importance of thoroughly preparing patients for prostectatomy. He mentioned a London surgeon who took the utmost pains in preparing all of his patients that were to be operated upon for enlarged prostate. He favored the perineal operation in most cases.

Dr. Alexander Hugh Ferguson, of Chicago, used a straight perineal incision, low down, for the removal of the enlarged prostate, so as not to cut the sphincter of the rectum.

The Operative Treatment of Tuberculous Joints

Dr. Horace J. Whitacre, of Cincinnati, Ohio, advocated four kinds of operations for tuberculous joint disease. 1. Osteotomy for the removal of an epiphysial focus. 2. Erasion or arthrectomy of those cases, particularly in the young, where the focus was circumscribed and a fair amount of synovial membrane remained. 3. Excision. 4. Amputation. Osteotomy for the removal of a focus localized in the epiphysial end of a bone was a most logical operation. Six cases of rather extensive tuberculosis of the knee were treated by arthrectomy or erasion. In four of these cases a complete cure of the disease with a useful stiff joint and good position was attained. In three of the cases a slight amount of motion giving some assistance to the patient in locomotion was regained. In two cases amputation was subsequently resorted to. These subsequent amputations occurred in patients who passed from his observation very soon after operation. They undoubtedly represented recurrence in a spot where the dissection had not been sufficiently thorough.

Excision for a tuberculous joint was reserved, in his practice, for those cases in which the bone ends were damaged.

The Present Status of the Surgery of the Stomach

This was the title of the address in surgery which was delivered by Dr. W. D. Haggard, of Nashville, Tennessee.

A discussion relative to operation for stomach lesions now was similar to that in regard to appendicitis twelve or fifteen years ago. Then only the desperate cases were submitted to operation. It was so now with many stomach cases. This, however, must yield to the logic of results, and in a short time the profession generally would advise early operation, as they now wellnigh universally did in appendicitis. Improved technic, low mortality, and satisfactory end-results would inevitably do away with the empirical treatment of occult, intractable stomach troubles.

The typical indication for operative interference was obstruction of the pylorus from an open or cicatrized ulcer causing dilatation of the stomach, with stasis of food. The short-circuiting operation of gastro-enteric anastomosis found its ideal indi-

cation here, and had given the most beneficent results. It was the *fons et origo* of the present group of drainage operations, as well as other gastric procedures, and was altogether the most perfected and satisfactorily employed operative device. The other complications of ulcer requiring operation were pointed out as—1. Perforation; 2. Hematemesis of chronic ulcer. Operation was advised in repeated acute hemorrhage or in constantly recurring small hemorrhages. Other indications were found in the following groups of cases: 3. Obscure and persistent stomach symptoms, with a long history of dyspepsia, culminating in hemorrhage, after it had been controlled by medical means and the patient put in the proper condition for operation. 4. Cases of chronic intractable dyspepsia, even without dilatation, which failed to yield to proper medical treatment, and were not due to a general visceral ptosis.

The author gave a synopsis of the other stomach conditions for which operation was recommended.

Aside from malignancy, chronic ulcer and its complications furnished most of the indications and the majority of cases. It was not impossible that the bulk of cases of inveterate dyspepsia was really due to ulcer. That it was found post-mortem so very many more times than it was recognized clinically, was a reproach, not so much to diagnostic measures as to failure to properly apply them.

Dr. Haggard quoted Moynihan as saying that he did not know any operation in surgery which was more successful or which was attended by better or more striking results than gastro-enterostomy for chronic ulcer of the stomach. It was in duodenal or pyloric obstruction that gastro-enterostomy found its most striking indication and attained its highest efficiency. The many various methods for performing gastro-enterostomy gave a feeling of wonder at the ingenuity displayed. The relative safety of the operation, even by a varying technic, was illustrated by Robson's results; namely, over 200 cases, with a mortality of 3.6 per cent. The posterior operation had largely supplanted the anterior, because of the avoidance of the loop around the transverse colon and the mischief it caused. The anterior operation was reserved for malignancy, where the speediest technic was the best, where the stomach could not or should not be delivered freely, and the operation was palliative in its intent. The Murphy button could be employed in gastric and intestinal surgery on account of its rapid insertion; while the McGraw elastic ligature found its best scope in such cases if an immediate opening was not required. The posterior operation without the loop, with a longitudinal incision from one to three inches from the duodeno-jejunal angle, gave almost complete immunity from the vicious circle.

The speaker quoted freely from the writings of those whose names are prominently connected and identified with gastric and intestinal surgery.

A most logical operation for gastric ulcer was that proposed by Rodman, of excising the ulcer-bearing area by a pylorectomy. This stopped the possibility of hemorrhage, removing the lesion and cicatrices. This removed, also, all of the ulcers, as they were usually multiple, and situated in the antrum pyloræ, which was also the cancer site. It removed any co-existing duodenal ulcer in the first two and a half inches.

There were two classes of cases in stomach surgery that did not give good results; namely, (*a*) Ulcer with an open pylorus, sometimes allowing the anastomosis to close and inviting the repetition of the ulcer. (*b*) The neurasthenic—that most to be pitied of all non-fatal cases.

The most crying need was some means for the early recognition of cancer of the stomach. Until the magic and immunizing therapy which would convert malignancy into benignancy was discovered, extirpation was the only resource in such cases. One third of all carcinomata were in the stomach, and the average duration of life was nine months.

Reference was made to the excellent results obtained by Drs. William J. and Charles H. Mayo in stomach surgery. Dr. William J. Mayo, in 114 malignant cases, had 21 deaths, or 18 per cent. There were 63 pylorectomies and partial gastrectomies, with 8 deaths, or 13 per cent. The worst cases had only a gastro-enterostomy, and the severity caused the high mortality. In his last 40 cases for malignant disease, the mortality was only 5 per cent. As to ultimate results in 70 cases of resection, 4 lived more than 3 years, 3 were still alive and without return of the disease, a number were well after over 2 years, and the majority lived over 1 year.

General Blood-poisoning Emanating from the Nose and Pharynx

Dr. J. Holinger, of Chicago, stated that microorganisms of the nose and pharynx were formerly considered harmless. A great many diseases could be directly traced to them. Fatal cases of blood-poisoning occurred, but were not very frequent. This statement in the paper was substantiated by the histories of two cases. The speaker said that Dr. Schwarzenbach had shown that a number of general diseases, such as acute and chronic articular and muscular rheumatism, sciatica, etc., could be traced directly to general

infection from the pharynx with streptococci. He proved this statement by showing that with the decrease in number of streptococci in the pharynx all general symptoms diminished and disappeared. He had the advantage of practising in the mountains, where these infections were only sporadic and epidemic. In the city, these were constant, general, and endemic. The connection between acute rheumatism and tonsillitis was well known. The tonsil received its lymph from the nose and pharynx, and might therefore become secondarily inflamed in cases of infections located in the nose and pharynx. There was a difference in the course of the disease, whether the infection dated from the nose and pharynx, or directly from the tonsils. The most striking example was diphtheria. All knew the seriousness of diphtheria starting from the tonsils and the lymphatics of the naso-pharynx, while diphtheria of the nasal mucous membrane was a rare but comparatively innocent disease. Histories of cases were given by the author where chronic rheumatism of many years' standing, which had been treated with all kinds of medicine, massage, and X-ray, disappeared when the suppurative processes in the nose and its sinuses were cured.

The mixed infections of tuberculosis of the lungs and bones might be avoided, in the opinion of the author, if the pharynx and nose whence they started were treated.

The treatment was simple. Very little was accomplished by sprays. Washes with boric acid solution were used in the nose, and in the pharynx, paintings with solutions of iodine in iodide of potash and glycerine. Difficulties were often experienced in locating a suppuration of the nose or naso-pharynx; then the experience and skill of the specialist came to the rescue.

Cancer of the Rectum

Dr. E. B. Smith, of Detroit, Michigan, stated that the modern treatment for cancer consisted of internal medication of arsenic, X-ray, local application of arsenic and zinc, Coley's fluid (the mixed toxins of the streptococcus of erysipelas and the bacillus prodigiosus), resection of nerves at the site of malignant neoplasms, ligation of blood-vessels supplying blood to the parts, and extirpation.

The author made a special plea for extirpation in the treatment of cancer of the rectum as being the only procedure that would give hope of a cure. He touched on colotomy as the operation of necessity, rather than the operation of choice, and urged an examination in all cases where the rectum was involved, as in cases of hemorrhoids, where there were bloody stools, where there was painful defecation, and where there was constipation, and advised a microscopical examination in all cases where the neoplasm was developed. The author showed that the extirpation of a part or the whole of the rectum by the Kraske method was the ideal operation, and should be practised only by those who have had experience in capital operations.

The Surgical Management of Injuries of Peritoneal Viscera Resulting from Violence Applied to the Abdominal Wall

Dr. John Young Brown, of St. Louis, Missouri, called attention to the dismal mortality in such cases, and emphasized the importance of their early diagnosis and prompt surgical treatment. He reported a series of six cases, which had come under his personal care during the past eighteen months, in all of which abdominal resection was done. Of the six cases, one recovered and five died. An analysis of the cases led to one conclusion; namely, the importance of early diagnosis and prompt surgical treatment by abdominal section in all cases of abdominal contusion in which there were present the slightest symptoms pertaining to injury to peritoneal viscera. If one waited until the classical symptoms of peritonitis were present, surgery promised little.

Dr. F. F. Lawrence, of Columbus, Ohio, read a paper entitled

Intraperitoneal Tuberculosis

He presented the following conclusions:

1. Intraperitoneal tuberculosis is frequently a local disease.

2. It probably occurs much more frequently in the female than in the male.

3. In a large majority of cases it is primarily visceral, and the general peritoneum is secondarily involved.

4. The surgical treatment is rational, sometimes agreeably surprising in results, and again bitterly disappointing.

5. In this, as in many other surgical conditions, early diagnosis and early operation will bring more certain results.

6. In this condition the greatest obstacle to overcome is the idea that it is a secondary condition.

7. No case of intraperitoneal tuberculosis should be denied the benefits of operation, no matter how extensive, so long as there is no positive pulmonary or pleuritic involvement, for the reason that some apparently hopeless cases fully recover.

8. When there is a tubercular peritonitis, a sequel of tubercular tubes, ovaries, or appendix, the primary focus should always be removed.

9. In these tubercular cases the mesenteric glands

have not been found frequently involved, and when they are, operation accomplishes very little good.

10. In tuberculosis of tubes and ovaries, the adhesions are usually firm; sometimes, though not usually, very vascular, and not infrequently involve loops of the small intestine; hence the greatest care is necessary to avoid serious injury to bowel, and at the same time separate completely all adherent surfaces and provide complete drainage.

11. Drainage is the great factor in recovery, when properly carried out.

Pyloroplasty with the McGraw Ligature

Dr. J. Henry Carstens, of Detroit, Michigan, said that many patients with disturbances of digestion could not be relieved by medication. These cases could not be diagnosticated. They should be subjected to an exploratory celiotomy. Gastro-enterologists should not treat patients for months and years if they could not make a positive diagnosis or cure the patient. After reasonable efforts, the patient should be sent to the surgeon for relief.

The McGraw ligature was a valuable means of relieving stricture at the pylorus and the resulting dilatation of the stomach. This method of operating was easy and quick, the danger was very small, and the operation was preferable to those heretofore used in benign contractions at the pylorus. It was a great deal better than gastro-enterostomy, as one restored as nearly as possible the normal condition. Quite a number of gastro-enterostomies had been reported, with a most gratifying result in some of the cases, but the difficulties encountered, the trouble with the vicious circle, frequently called for a double operation. The McGraw elastic ligature method should be the operation of choice.

Dr. Carstens concluded—1. That many stomach troubles were due to mechanical causes. 2. These cases could only be relieved by surgery. 3. Many cases could not be properly diagnosticated in the present state of our knowledge. 4. Obscure cases that were subjected to various modes of treatment without benefit should receive the benefit of an exploratory celiotomy.

Ovarian Cystoma

Dr. L. P. Luckett, of Terre Haute, Indiana, reported a case of ovarian cystoma in which he had operated. The tumor originated in the left ovary, was attached by a broad pedicle, which was tied off in sections. The uterus and right ovary were found to be normal. The fluid and tumor were estimated to have weighed between seventy and eighty pounds. The patient made an excellent recovery.

Surgical Treatment of Nephritis

Dr. Alexander Hugh Ferguson, of Chicago, presented a further report on the surgical treatment of this disease. He reported seven cases upon which he had operated, with two deaths.

Case 1.—Capsulectomy and nephrotomy; return of symptoms; no second operation; still improved.

Case 2.—Chronic nephritis in pregnancy; unilateral capsulectomy and nephrotomy, with recovery.

Case 3.—Chronic painful left interstitial nephritis; capsulectomy and nephrotomy, followed by recovery.

Case 4.—Nephritis; unilateral capsulectomy and nephrotomy, with recovery.

Case 5.—Nephritis; unilateral capsulectomy and nephrotomy; death.

Case 6.—Bilateral nephritis; bilateral capsulectomy; unilateral nephrotomy; multiple punctures on the other side; death.

Case 7.—Double recapsulectomy; multiple punctures; patient progressing toward recovery.

Closure of Uretero- and Vesico-vaginal Fistulæ

Dr. Maurice J. Rosenthal, of Fort Wayne, Indiana, reported a case of closure of uretero- and vesico-vaginal fistulæ. He described the operation which he did in detail, and concluded by saying that a considerabl area of scar tissue and vaginal mucosa may be inverted into the bladder without producing ill effects. Ureteral fistula imbedded in scar tissue may be inverted into the bladder and continue to discharge its urine without becoming stenosed. Even large vaginal fistulæ, where part of the bladder-walls were lost in scar tissue from a previous hysterectomy, may be successfully operated by denudation and suture through the vagina without disturbing the relations of the bladder or any adhesions of pelvic viscera which might have formed in the scar.

Sprained Ankle

Dr. Robert Carothers, of Cincinnati, Ohio, read a paper on this subject, in which he drew the following conclusions:

1. No one is exempt from a sprained ankle, although some are more prone to it than others.

2. That, in severity, a sprained ankle will range from a trivial accident to one of extreme severity and everlasting.

3. That the outer side more often than the inner side of the ankle is the seat of trouble.

4. That the diagnosis which is ordinarily made with ease is at times made with difficulty, and occasionally an X-ray examination is required to make the diagnosis certain.

5. That the treatment by immobilization with

a plaster-of-Paris cast is unsatisfactory and at times injurious.

6. That the treatment instituted by Cotteral, the so-called adhesive plaster strappings, advising and urging the patient to walk on the injured foot, the early removal of these straps, followed by massage, gives the most satisfactory and best results.

7. That the old cases are to be, under anesthesia, converted into acute sprains and treated in the same manner.

Dr. David C. Peyton, of Jeffersonville, Indiana, reported an interesting case of pyemia following an operation for appendicitis.

Appendicitis

Dr. R. E. Haughton, of Richmond, Indiana, followed with a paper on the history, differential diagnosis, pathology and etiology, medical and surgical treatment of this disease. He presented a brief history and plea for an abatement of the use of the knife in place of treatment by remedies, in view of the statistics and results.

Shall the Profession or the Laity be Responsible for the Death-rate in Appendicitis?

Dr. J. C. O'Day, of Oil City, Pennsylvania, said that every physician, when confronted with a case of appendicitis, should frankly tell the patient the nature of his trouble; explain to him, honestly and candidly, the disposition of his disease; that no one could tell what an inflamed appendix would do; and that there was no safety till the offending organ had been removed. If the patient then decided to defer operation, he, not the surgeon, should be responsible. If this was done, he thought we would hear no more complaints of, "Why did not the physician advise operation before it was too late?"

Sarcoma of the Anterior Segment of the Globe

Dr. O. Tydings, of Piqua, Ohio, presented the history of a patient upon whom he had operated for the removal of a melanosarcoma of the anterior segment of the globe. The diagnosis was confirmed by competent pathologists. Five days after the removal of the tumor, the patient disappeared and the speaker did not see him again until the following August. There was no recurrence; the cicatrix was smooth; the lone pigmented spot, not larger than a pin-point, which the author took to be the remains of an old hernia of the iris, was still present, but absolutely quiescent. The patient's vision, which, when he first saw him, was, right eye 20-40, and when operated 20-200, left 20-30, was now 20-20 in each eye.

So far as the author had been able to examine authorities, the case stood alone. Primary melanosarcoma of the cornea was rare. Nine cases had been reported of sarcoma of the cornea by different authorities. None of these cases, however, according to an English authority, was above suspicion.

Three Cases of Extraperitoneal Rupture of the Bladder Complicating Fracture of the Pelvis, with Recovery

Dr. Joseph Rilus Eastman, of Indianapolis, Indiana, said that injuries of the pelvic bones were attended with more or less risk to life, which did not ensue solely from the damage done to the bones themselves, but arose usually from the injuries done to the viscera of the region involved. Formerly, death occurred in a large percentage of cases of rupture of the bladder. The mortality was naturally much higher in those cases in which a tear of the peritoneum made possible the entrance of urine into the peritoneal cavity. However, extravasation of urine through the pelvic connective tissue in cases of purely extraperitoneal bladder rupture also formerly caused a high mortality rate. This mortality rate had been decidedly decreased by modern methods of dealing with shock, and free and rational bladder drainage. The immediate and characteristic symptoms of the injury were, intense pain in the abdomen, collapse, and great irritation of the urinary reflex, with ineffectual attempts to void urine. Inability to void the urine was usually present, whether the peritoneum was torn or not. If the peritoneum was injured, peritonitis of the sthenic type developed duly. As the injury usually occurred while the bladder was full, an area of dullness and tenderness was to be found over the bladder, extending irregularly beyond the normal limitations of bladder dullness, and a large amount of bloody urine might usually be withdrawn by catheterization.

As to the diagnosis of fracture of the pelvis itself, this could occasionally be made visually. Usually, however, the surgeon must depend upon his senses of sight, touch, and hearing for the well-known signs of fracture, deformity, abnormal mobility, and crepitation. The deformity was usually not pronounced.

In the three cases described by the author, the treatment consisted in combating shock, chiefly with normal salt solution and adrenalin; in the removal of clot, suture of the rent in the bladder; appropriate bladder drainage; rest; and the application of a bandage in such a manner as to prevent movement of the pieces of bone which were broken off.

Perforating Ulcers of the Duodenum

Dr. M. A. Austin, of Anderson, Indiana, reviewed the literature of this subject, and, after referring to the symptomatology, stated that he had had two cases of ulcer of the stomach come to him after being treated indefinitely for dyspepsia. The classical symptoms of ulcer of the stomach and duodenum were pain, hemorrhage, and vomiting, yet either or all might be absent. These symptoms were discussed at length. He reported an instructive case of a farmer who died from ulcer of the duodenum before consent was obtained to do an operation. He secured a post-mortem examination, and found, on making a median incision, that the general peritoneum was filled with fluid and gas. On making a free incision from the sternum to the pubes, he removed nearly two gallons of yellowish, fresh-smelling fluid, such as would come from the stomach and duodenum. In the lower left quadrant of the abdomen was a well-marked obstruction of the small intestine, produced by a torsion, and the contiguous bowel showed as if the obstruction had been present a number of hours. Following up the small intestine, fresh adhesions were found binding the cardiac end of the stomach and the duodenum to the liver and gall-bladder. On pulling the duodenum slightly, its adhesions to the gall-bladder separated, and showed a typical ulcerative perforation of the duodenum from which the fresh stomach contents escaped. Removing the stomach and duodenum entire, and opening them along their upper border, he found the stomach practically normal, with some mucus, and evidences of a mild gastritis. About two inches below the pylorus and on the posterior surface and upper border of the duodenum was a perfectly clean punched-out area of the gut-wall. The serous surface showed a perforation three sixteenths of an inch in diameter, while on the mucous surface there was an erosion seven sixteenths of an inch wide. There was no special induration around the ulcer, and there were no signs of any accompanying ulcers in the stomach. There was no obstruction to the pylorus, and no pathological changes in the gall-bladder or bile-ducts.

In this case there was undoubtedly the rare condition of an acute ulceration. This produced the pain, and the shock from the severe pain caused an adynamic ileus, followed by a torsion. At the time he first saw the patient he was certain there was no perforation, and that it occurred some time after he had made his examination, probably induced by the ingestion of considerable water into the stomach and the natural extension from the accumulating gas back of the intestinal obstruction.

When Prostatotomy Instead of Prostatectomy is Indicated

By Dr. Charles E. Barnett. (This paper appears in the present issue of Surgery, Gynecology and Obstetrics.)

The Operative Treatment of Retrodisplacements, with a New Operation, Intramural Transplantation of the Round Ligaments

By Dr. Channing W. Barrett. (This paper appears in the present issue of Surgery, Gynecology and Obstetrics.)

Visceral Ptosis: Its Surgery

Dr. Earl Harlan, of Cincinnati, Ohio, pointed out the relations and connections of general abdominal ptosis to kidney ptosis, ascribing the latter as the usual starting-point of visceral ptosis, giving his reasons for such, and tracing in detail the course of kidney ptosis to a condition of general abdominal splanchnoptosis.

He ascribed special or general ptosis as being due to either bodily or abdominal ailments which would produce a continued lowered vitality of the peritoneum, thereby producing loss of tone of the latter with a correspondingly diminished intra-abdominal pressure, tension, and resistance. Of ailments conducing to the latter condition, he classified such conditions as those attendant upon irregularities of diet, including indigestion, with fermentation and constipation, the latter's debilitated effects upon the peritoneum being facilitated by the traumatism produced to the peritoneum by the violent peristaltic action of drastic cathartics. The etiological scheme of ptosis is as follows: Interference with normal digestion from influences either local or general conduced to fermentation and constipation, these conditions being always accompanied with more or less gaseous distention, which latter pressure interferes with the return circulation of the mesenteries, producing localized congestions and stasis at several points, parts of least peritoneal resistance, i. e., the peritoneum in front of the kidney, the peritoneum gradually giving way at the weakest points, usually, other things being equal, starting with the kidney, the latter impinging on the peritoneum more than any other visceral organ under these circumstances; thus the gradual establishment of general ptosis.

He maintained that visceral dislocations were of frequent occurrence, and advised careful search for them in all abdominal cases, and especially in searching for the cause of abdominal complaints wherein nervousness, indigestion, and constipation, accompanied by feelings of abdominal uneasiness

and distress on the part of the patient. He had several cases coming under his observation, who had been operated for appendicitis or treated for ulcer of the stomach, in whom he found the primary trouble to be dislocated kidney, the patient experiencing relief after the correction of this trouble.

He attributed ulcer of the stomach and duodenum in many instances to dislocated kidney, liver, stomach, and spleen, and advised careful search for visceral dislocations before operative procedures for gall-stones, appendicitis, and gastro-enterostomy.

In enteroptosis the splenic and hepatic flexures should be attached to the anterior abdominal wall after the method of Lambotte, or preferably to the back, after the method described by the speaker, with a shortening of the meson.

A dislocated spleen should be pocketed beneath the parietal peritoneum and anchored, the suspensory ligaments being at the same time shortened, if necessary, after the technic of J. B. Hall.

Fixation of the liver may best be secured by first denuding the parietal peritoneum, then passing kangaroo tendon sutures from the under surface of the edge of the liver through the latter and the parietal tissues, then back through the liver again, and tying the sutures on the under surface of the liver.

The author recommended the following method for dislocated kidney: Cut down upon the organ in the line of dislocation from the front, press aside the abdominal viscera over the tract of the dislocation, and carefully reattach the peritoneum to the back, following up the tract until the kidney rests in its original location; imbricate the peritoneum in front of and over the lower end of the kidney, if there be enough elongation (and there usually is) of the peritoneum in front of the kidney to allow of sufficient dislocation forward to give rise to pressure symptoms upon the descending portion of the duodenum and the colon. Attach the meson of the ascending and transverse colon (if necessary) to the wall of the back, and shorten them, if need be, to bring the bowel into position, as also the hepatic flexure of the colon. Care should be exercised during the operation not to wound the colica sinistra or colica media arteries, as the case may be, and the kidney must not be placed too high. Remove the appendix. A prolapsed duodenum should be normally replaced and its fixation secured if necessary. Use either silk or catgut ligature. If there be much fat about the kidney, it is best to incise the peritoneum and remove it. If the kidney be adherent to the peritoneum, enucleate from its bed of adhesions and then replace and attach it in the manner described above. A continuous superficial catgut suture may also be used to secure the anterior surface of the kidney to the peritoneum. You thus obliterate the path in which the dislocated kidney wanders, and re-establish the normal relations and positions of both the kidney and abdominal viscera, and in so doing re-establish the equilibrium of the sympathetic and general nervous systems. By reason of the congestion of the peritoneum, prompt and efficient union of the latter to the back is secured. Rest in bed with proper diet should bring about perfect recovery in a couple of weeks. No danger of pyonephrosis can result from this operation, as there are no deep sutures through the kidney, and the danger of abdominal troubles is practically *nil*, an aseptic operation being done.

The object of this operation is threefold: 1. To reattach the peritoneum to the back, thereby obliterating the path of dislocation, a principle which is not new, but for which purpose he considers the operation of nephropexy is ill-advised; 2. To relieve the forward projection of the lower pole of the kidney by imbricating the relaxed peritoneum in front of it, and thereby rendering the peritoneal resistance to this part of the kidney three times its former strength; and 3. To re-establish the normal position and relations of the viscera. In operating for the correction of a badly dislocated kidney, a careful examination of the surrounding parts should be made. The attachments of the peritoneum, together with the gall-bladder and duct, the ascending and transverse colon, with the meson and the duodenum, should be carefully explored. The position of the liver and its relation with the placement of the kidney should be determined before operating.

He emphasized the importance of seeking and correcting dislocated kidney, if found, in connection with gastric ulcer, and this would, of itself, cure many cases of gastroptosis and ulcer without the necessity of a gastroenterostomy.

DR. A. E. HALSTEAD, of Chicago, read a paper on POST-OPERATIVE ACUTE DILATATION OF STOMACH. (This paper will appear in the December issue of SURGERY, GYNECOLOGY AND OBSTETRICS.)

REPORT OF THE FIFTH ANNUAL MEETING OF THE SOCIETY OF CLINICAL SURGERY

HELD AT CHICAGO, OCTOBER 5-8, 1905

REPORTED WITH THE PERMISSION OF THE SOCIETY BY DR. JOHN C. HOLLISTER

Having had an opportunity to attend the fifth annual meeting of the Society of Clinical Surgery, and having had the courtesies of the Society extended to me, I take pleasure in submitting a report of the principal operations and demonstrations that were brought before that body. It hardly seems possible that so many good things could be heard and seen in so short a time.

The Society consists of most of the leading surgeons of America, who meet together twice a year for the purpose of observing the work of its members. Out of a membership of thirty-eight, twenty-five were present, and judging from remarks heard from its members, one would think this last meeting the best ever held.

The first day of the three was spent in the Presbyterian Hospital in Chicago in the morning, and at the County Hospital in the afternoon. An eight-o'clock train was taken for Rochester, and the next day was spent at the Mayo's Hospital and office. Of the last day, the morning was spent at Drs. Murphy and Andrews' clinics at Mercy Hospital in Chicago, and the afternoon in one of the laboratories at Chicago University, and at Dr. M. L. Harris's clinics at the Passavant and Cook County hospitals.

The following is a brief outline of the demonstrations and clinics held during the meeting. No attempt is made to give in detail the exact method of procedure in the operative work, and doubtless many important points brought out by the different surgeons have been omitted.

At the Presbyterian Hospital, on Thursday, October 5, 1905, the session was begun by a laboratory demonstration by DR. J. C. WEBSTER.

He first made a few general remarks about the value of typographical representations for teaching anatomical and pathological conditions, and emphasized this by showing plaster casts, etc. He said this was not sufficiently recognized in the United States.

He then gave the history, and showed the specimen from a case, that, as far as he knows, is unique. The specimen was obtained from a man of 34, who died from acute peritonitis after an operation for inguinal hernia. The hernia, which the patient had had all his life, was on the left side. The contents of the hernial sac were found to be not intestinal, *but a uterus, tubes and ovaries*. The uterus was adherent to the ring, and was removed by cutting it away from the prostate. Part of the bladder was evidently removed. The gross specimen was shown, as well as microscopical slides taken from different parts of it. A complete report is being worked up, and is to be published later.

As a few preliminary remarks, he said there were no vasa deferentia reported in the case, in spite of the fact that the man had been the father of two or three children. But sections have revealed a tube-like vas which runs along the broad ligament underneath the tube and has a relationship to the epididymis. One interesting point was the presence of small fimbria and a small cyst representing the remains of the pronephros. Testicle of right side was down in scrotum and penis was negative. The facts gained from a thorough study of this specimen may prove of immense value to gynecological embryology.

In the large amphitheater in Rush College, DR. J. B. MURPHY showed the following clinical cases:

I. The first was one of *fracture of the olecranon*, in which the wiring had been made entirely exarticular, and had been done with only slight (quarter-inch) incision for the drill. The wire passed through the ulna from side to side and around the olecranon through the triceps tendon, all subcutaneously. This case was illustrated by drawings, X-ray pictures, etc., and an opportunity was given for personal examination.

II. The second case was one of *sarcoma of the vastus externus and vastus internus*. All of the vasti and part of the rectus muscles were removed at operation, and in order to preserve extension the sartorius was substituted for the quadriceps. The case illustrated especially three points: 1. The rectus is an independent muscle from the vastus externus and internus; 2. The vastus externus and internus must both be removed for sarcoma, as they are the same muscle; 3. Substitution of one muscle for another is of great value in restoring function, as it can be seen this boy walks with a material limp.

III. His third case was one of *Erb's paralysis* (birth-paralysis). The posterior brachial cord had been divided just above the clavicle. The distal

end was found to be of exactly normal size, notwithstanding the division occurred in infancy and 24 years had elapsed, with ends separated fully one inch, which opposes Waldyer's theory that the nerve develops from the central end alone. He also reported repair for an accidental division of the upper four roots of the brachial plexus 17 years after the accident. The anastomosis was aided by muscular implantation.

IV. Then he showed a case of *infantile paralysis* involving the external popliteal nerve. He had transplanted the external popliteal into the internal popliteal seven months before by making the niche anastomosis, and he emphasized the fact that end-to-end apposition is necessary for regeneration, and that drawing the nerve through a slit in the intussipiens is not good practice. He spoke of the fact that the whole question of nerve regeneration is being revised, and that the present indications are that the regeneration is from the internal layer of Schwann as well as from the proximal end of the nerve.

V. His next case was one for operation, upon which he performed a *suprapubic partial prostatectomy*. Among his preliminary remarks he said: About 25 per cent of enlarged prostates were bladder tumors and 75 per cent were perineal tumors, and he now removes the former by the suprapubic route and the latter by the perineal route. Mortality of both is about the same, for the mortality is not due to the line of attack, but to the condition of sepsis and kidney disease, and not the size of tumor, etc. The number of long-standing extreme cases attended by gangrenous mucosa, etc., are steadily becoming fewer, and it won't be long before the mortality will be practically *nil*. The resulting fistula is the disagreeable feature in both operations. During the operation he emphasized the value of short median line incisions, with division of the attachments of the recti transversely, in order to get space enough. Restoration of the muscle is rapid. The value of incising the bladder over a sound, at the same time pushing the peritoneum back, was emphasized as a safeguard against opening the peritoneum. The Trendelenburg position has many advantages. A calculus was removed, which he judged, from its shape, to be ureteral in origin or in development. A small-sized middle lobe was removed by scissors and forceps. The operator called attention to the fact that retention may be as complete from a small-sized process which closes over the meatus as from a larger tumor. He advises that no special attention be given to the prostatic urethra, because there is no danger of a stricture following its removal. He called attention to the use of subiodide of bismuth gauze to stop hemorrhage. The wound was closed by two figure-8 sutures. The lower loop of the 8 includes the bladder-wall layers, and the upper the abdominal muscles, by which the operator claims the bladder is held up in position best, and the approximation of the abdominal-wall layers is best attained, obliterating spaces, etc.

The results in his prostatectomies were constantly improving; so now he considered the operation almost as favorable as the intermediate operation for appendicitis.

Dr. Frank Billings showed five "border-line" cases.

I. The first was a case of a man 29 years of age, who had been ill two weeks, and was exhibited as a case in which the diagnosis was at first a difficult one. He had complained of low right chest pain. This was severe in the costal region and at the margin of the ribs. He was tender over the lower chest and in the region of the gall-bladder, and there was some slight rigidity in the right abdominal muscles. Some time later an effusion was found in the right lower chest. Temperature of 103°; pulse somewhat rapid. The bowel movements were negative, and he had vomited only once. Diagnosis lay at this time between cholecystitis, duodenal ulcer, and pleurisy with effusion. The blood examination showed 28,000 white-blood corpuscles. There was increase of lymphocytes in the fluid aspirated from the chest. Five days ago there had been a large hemorrhage from the bowel, showing the typical tarry stools, a specimen of which was passed about. The next morning the patient vomited a large amount of blood. Tenderness diminished, and fluid in the pleura has been diminishing since. The final diagnosis is duodenal ulcer with perforation. Pleural effusion was steadily diminishing. "Tuberculosis as a cause of ulcer is rare, but the increase of the lymphocytes causes one to think of it in this case. To-day, red-blood corpuscles are 1,416,000, and white-blood corpuscles 50,000, due probably to reaction from the hemorrhage and continuation of the infection. Urine is negative. Operation was not performed, because of possible shock and severe exsanguination. Patient has been treated by calcium chloride, morphine, and rest.

II. The second case was that of an 18-year-old cigarmaker, who, having had a cough and repeated lung hemorrhages, was sent into the hospital with a diagnosis of tuberculosis of the lungs. There is dullness over upper left lobe, bronchial breathing, and râles. Râles and roughened respiration over the lower right lobe. Temperature 103.6°. Careful examination of the sputa showed no tubercle

bacilli, but the granules of actinomycosis and shreds of tobacco-leaves, which had evidently been drawn into the lungs and then coughed up with the blood and pus. Cultures of the granules were passed about. X-ray treatment and potassium iodide up to 30 grains three times a day were followed by great improvment. No râles and no blood in fluid to-day. Weight has not improved, but general nutrition is good. Of late he has been put upon copper sulphate, half-grain three times a day. Actinomycosis is found to be more common, the more carefully we look for it. Many cases of supposed tuberculosis of the lungs are probably cases of actinomycosis.

III. The third case was that of a girl of 8 years, upon which the diagnosis had been made of probable tubercular peritonitis. The only other possible diagnosis was of Banti's disease. Dr. Billings emphasized particularly under this case the peculiar feel by rectal examination of the pelvis and lower abdomen, which he described as like a bag of worms and is characteristic of the disease. A large percentage of lymphocytes (58 per cent), with no rise in the number of leucocytes, was pointed out. Under X-ray treatments and tonics there had been marked improvement. Three clinical types of tubercular peritonitis are to be differentiated:

1. When there is free abdominal fluid;

2. Where there are adhesions only, or with pockets of free fluid, often resulting in fistulæ;

3. Where there is mixed infection, blood, and pus, nodes and nodules, and parchment-like consistence of omentum, etc.

In regard to surgical *versus* medical treatment of such cases, the Doctor's opinion is, that if there is a focus in the abdomen of the disease, it should be removed; otherwise the treatment is medical.

IV. The fourth case was one of a man 39 years old, of which the diagnosis is still obscure. Specific history 20 years ago; 10 years ago, beginning tabes; 6 months ago, a mass in left upper belly and kidneys, movable and nodular. Urine contained microscopic blood only. There were stomach neurotic symptoms. Large doses of potassium iodide, 360 grains a day, were given, and a diagnosis of hypernephroma was made. The large kidney tumor did not change in size from the potassium iodide. It was adherent to the colon. X-ray treatments were begun, and the tumor melted away, but a tumor of the other kidney has begun to develop on the other side. There is no sign of metastasis anywhere. Findings seem to indicate that the tumor was a gumma, but it is by no means sure.

V. The fifth case was also one of *tubercular peritonitis*, which is improving after exploratory incision, rest, sunshine, and X-ray treatments. The excess of lymphocytes in the abdominal fluid and the wormy feeling in the rectum were again emphasized.

A demonstration was then given in another room by DR. OLIVER S. ORMSBY upon the subject of *Blastomycosis*.

First some general remarks were made, then many lantern-slides were shown and described in detail, and microscopical slides were exhibited. In an adjoining room some half-dozen clinical cases were later exhibited and described.

Dr. Ormsby said, in part, that most blastomycosis cases have been recognized in Chicago, having come here from the surrounding states. Sixty cases of skin blastomycosis only have been reported. There are 12 known general cases, 4 of which are on record to-day, and 7 are being worked up to be reported later. The Doctor emphasized the fact that there are probably many cases that have not been, as yet, recognized, and that the disease is probably much more common than is generally thought. He gave a detailed description of the etiological factor, the fungus, emphasized the simplicity of its identification, and showed many lantern-slides illustrating its form and appearance. All parts of the body can be invaded, the face most frequently, and the hands next. It usually is found among males who are 40 or more years of age; starts as a papule or pustulopapule; soon becomes the size of a dime, and then spreads to a larger area. The crusting on the top and healing in the center, leaving a superficial delicate scar which later becomes obliterated, was described as characteristic. Ulceration is frequent, and the distinct sloping border of the ulcer is marked. Diagnosis is made by pricking one of the small abcesses at the border and examining the contents. The treatment is mainly by potassium iodide, which was found by Dr. Bevan a year or so ago to be of distinct value.

In the large operating-room of the hospital a clinic was then held. First DR. A. D. BEVAN had for operation a case of *undescended testicle*. Dr. Bevan has paid particular attention to this line of work, and the operation was an excellent example of his extremely satisfactory method. The two main points—the one of freeing the cord and vessels sufficiently to bring the testicle far down into the scrotum without tension, for the accomplishment of which all tissues, except vas and vessels, are divided, and the vessels, also, if necessary; and the other of making the scrotal pocket large enough to retain the testicle—were nicely and definitely shown. The full description of the technic of the operation has been published in the *Journal of the American Medical Association* for September, 1903. Dr. Bevan's

method is probably one of the best practiced today.

This was followed by a demonstration by DR. NICHOLAS SENN, who first made some general remarks in regard to animal ligatures and showed specimens. He spoke of the great favor with which the profession regards the Claudius iodized catgut, which, of late, Dr. Senn has used exclusively, as it combines the three necessary qualities of being strong, of being very pliable, and of being antiseptic. The objections to catgut are, that it is largely made up of elastic tissue with very little fibrous tissue, and that it frequently contains parts of the mucosa of the gut, which facts detract from its strength and its sterility. During Dr. Senn's recent trip to northern Greenland he obtained specimens of tendons from the walrus, from the whale, and from the narwhal. These consist entirely of parallel fibers of fibrous tissue, and Dr. Senn thinks they will prove far superior to the catgut, especially the narwhal tendon, as they can be easily made aseptic, and are much stronger. Dr. Senn is beginning a series of experiments upon this suture material.

He then demonstrated a case and showed X-ray pictures of a case of *coxa vera*, and emphasized, in contrast to many writers upon the subject, that it is always safe to predict a shortening of one or two inches and of atrophy of the limb.

The next demonstration was one by DR. L. HEKTOEN upon the *analysis of the mechanism and other phases of phagocytosis*.

He said in part: "Wright and Douglas showed that in order to have phagocytosis of bacteria these must be acted upon first by serum. The serum contains a substance that prepares certain bacteria for phagocytosis, makes them susceptible to phagocytosis, and hence called opsonin. Normal human serum contains opsonin for streptococci, staphylococci, non-virulent pneumococci, anthrax bacilli, and other bacteria. Normal opsonins are destroyed by heating serum to 56-60° C. for thirty minutes; they are also neutralized by a variety of simple salts. When an animal or human being successfully passes through an infection with streptococci or staphylococci, or other bacteria, or is experimentally immunized or vaccinated against certain bacteria, the amount of opsonin in the serum may increase. We may speak, therefore, of immune as well as of normal opsonins. Miss Hamilton, in Dr. Hektoen's laboratory, finds that when animals are immunized to certain pseudo-diphtheria bacilli (Ruediger's bacillus), the increase above normal of opsonic substance is very remarkable. Dr. Hektoen also presented evidence to show that bacteria are destroyed within phagocytes in vitro. Anthrax bacilli grow freely in dog-serum and in washed dog-blood, but they are destroyed in defibrinated dog-blood, and the amount of destruction runs parallel with the number of leucocytes present. Furthermore, anthrax bacilli heated with dog-serum (sensitized), then washed, and then mixed with dog-leucocytes washed free from serum, are also destroyed, whereas bacilli so treated and then mixed with dog-serum or broth grow freely. In this experiment the proof of the destruction by leucocytes is quite conclusive. Virulent streptococci grow in normal and immune serum, but are destroyed in immune serum mixed with leucocytes, as shown long ago by Denys, and more lately by Neufeld. Ruediger has also brought forward strong experimental evidence in favor of the actual destruction of streptococci in leucocytes in the presence of serum. There is therefore the best of reasons to believe that phagocytosis plays an essential role in combating various infections in which surgeons are especially interested. The results of the experiments discussed also tend to throw light upon the significance of local and general leucocytosis in infections."

At the close of the morning session, DR. BEVAN made a preliminary report of some experiments which he thinks will prove to be of great value. They were relative to the *use of copper sulphate in the treatment of actinomycosis*. Potassium iodide has been used and proved useful in small superficial lesions, but was of no distinct value in lung and abdominal lesions. The idea of using copper sulphate in these cases came from the fact that copper is used to destroy rusts on grain, one of which the fungus of actinomycosis really is. One case was shown of a patient who had an inoperable actinomycotic abdominal and pelvic mass with many fistulæ that had received practically no benefit from potassium iodide and X-rays. For the last three weeks patient has been taking internally one half-grain of copper sulphate three times a day, and the sinuses have been irrigated with a one-per-cent solution of copper sulphate. The result has been a rapid, marked diminution in the size of the abdominal mass, with drying up of most of the fistulæ and a gain of fifteen pounds in weight. It has been found by other writers that copper sulphate is bactericidal in solutions of 1 to 1,000 to 1 to 1,000,000, and that it can be tolerated for six months in from 2 to 6 grain doses a day.

Other experiments by Dr. Bevan have shown that it is of benefit, also, in cases of blastomycosis. Further and fuller reports are to be brought out later.

The afternoon session was held at the County Hospital, and was begun by an operation for *right inguinal scrotal hernia* by DR. M. L. HARRIS. The three main things emphasized were: 1. The cleaning off of the connective tissue from Poupart's ligament to allow firm adhesions between the layers of fascia; 2. The advantages of the Andrews-Girard method of closure of the abdominal wall; and 3. The use of aluminum bronze wire as suture material.

Dr. Harris said, other things being equal, stitch abscesses depend upon the hygroscopic properties of the suture material. This is entirely eliminated by the use of the wire. In over 1,000 cases during the last eight years, he has seen no case in which the infection has traveled along the wire. Three wires are used to close the hernia. They are left in for two weeks. Their removal is absolutely painless, and the patient is allowed to get up as soon as he recovers from the effects of the anesthetic. The aluminum bronze wire is stronger and more elastic than the silver.

The next operation was performed by DR. E. WYLLYS ANDREWS, in which he did a *colopexy for gastric adhesions*.

The case was one of greatly deformed stomach from perigastric adhesions in an insane patient. Doubts were expressed as to her truthfulness, but it was believed that great stomach disturbance really was present after eating. Instead of finding the stomach adherent to the gall-tracts, as in Dr. Andrews's cases previously treated by colohepatopexy, a strong band was found uniting its anterior wall to the abdominal wall below the umbilicus. This was divided, and as the simplest method of preventing its recurrence, a colon suspension was made by three catgut stitches, attaching the gastrocolic omentum to the costal margin. This was done partly with a view to connecting the enteroptosis. It was stated by the operator that good results followed this fixation in simple dilatation without perigastric adhesions.

The next demonstration was a case of Dr. J. B. Murphy's, that Dr. Andrews showed to illustrate a *new operation for the cure of the tabetic ulcer* of the foot, which consisted of stretching of the internal and external branches of the sciatic nerve. This was one of eight cases that have been operated on, a full report of which has not yet been published. Marked immediate improvement followed by complete healing of the ulcer resulted in this case. Some motor paralysis was also present. Not enough work has yet been done to warrant definite conclusions.

The surgical clinic for the afternoon was completed by an operation under local anesthesia, a *thyroidectomy* by DR. A. E. HALSTEAD for *exophthalmic goiter*.

This was followed by exhibition of further "border-line" cases by DR. J. B. HERRICK in the large amphitheater of Cook County Hospital.

The first case was one of *Intermittent Claudication*, and Dr. Herrick said: "Charcot was the first to describe a case, and to notice the relation between the condition and a similar condition in horses. There have been a number of cases described in the last decade. A monograph by Erb of Heidelberg describes 50 cases. They are more frequent to-day than is usually thought. The symptoms are best illustrated by the case before us. He is a Hebrew of 37; no hereditary history; no overuse of alcohol; no history or indication of syphilis. He is a free smoker of tobacco, a fact which is emphasized by Erb. Two years ago, patient noticed that while he was walking he began to suffer from cramps in the calf of his right leg, which were relieved by rest, but which came on again upon exertion. The foot became white on walking, and mottled or red when at rest and hanging down. Four months later the left foot became involved in the same way. There was an indolent ulcer the size of a fifty-cent piece at the base of the nail of the great toe, and the pain in the foot became so severe that morphine was required. Nothing abnormal about the whole body, except that the pulse is of low tension (right 110 mm., left 100mm.). One significant fact only in his history, and that is, he had one attack of pericardial pain like angina pectoris. The underlying pathological condition in every carefully reported case has been an arteriosclerosis or endarteritis obliterans of the vessels leading to the foot. There is believed also to be a spastic element of the arterial walls. Therefore the process is a circulatory one, with distinct motor and vasamotor phenomena. In this case it is impossible to make out the dorsal artery of the foot. In some cases they are thickened and hard. The foot becomes more or less reddish when it hangs down, and bluish red, especially about the toes, but after patient has walked back and forth a few times the characteristic whitish appearance reappears." All these clinical facts were shown on the patient.

The symptomatology, therefore, Dr. Herrick emphasized as being: 1. Redness of foot when hanging; 2. Blanching of foot after walking; 3. Pain, often extreme; and 4. Ulcers to gangrene.

The right foot of this patient had been amputated some time before. Differential diagnosis of this case must be made from—

1. Cerebral and spinal canal diseases.

(*a*) Sensory disturbances.
(*b*) Reflex disturbances.
2. Erythromenalgia.
(*a*) Reddening of foot.
(*b*) Pain, not brought on by walking.
3. Reynaud's disease.
(*a*) Pains, not from walking, but from no cause whatsoever.
(*b*) Fingers, ears, nose can also be involved.

The conditions of interest to the surgeon for differential diagnosis are:

Gangrene of the toes;
Morton's foot;
Flat foot; or some
Underlying bone or joint disease.

Treatment.—Diminish blood-pressure and dilate peripheral vessels by potassium iodide, nitroglycerin, rest, etc. There has been some temporary but no permanent relief by such means.

Dr. Herrick showed then a case to illustrate *Quinquad's test for alcoholics*. A fine crepitus in the knuckle-joints of the patient may be elicited when his fingers are placed gently against the palm of the examiner. This test is not pathognomonic, but can be obtained in most of the alcoholics (70 per cent).

Dr. E. R. Le Count then gave a pathological demonstration, showing specimens and giving the clinical facts of two cases which are especially interesting to the surgeon from a differential diagnosis point of view.

The history of the *first case* was as follows: The man's right buttock was injured by a fall, and there followed an increasing swelling, which was expansile and covered the entire gluteal region, over which was heard a bruit. Internal iliac artery was tied, with disappearance of bruit and swelling, and a diagnosis was made of aneurysm of the superior gluteal artery. Weeks later, swelling of buttock and right leg reappeared. Incision exposed a cavity with bony walls, from which there was a severe hemorrhage. A month later there was hemorrhage again from the wound. Several others followed. The left femur later broke spontaneously. Death one year after fall. Therefore the condition had been aneurysm, bone tumor, and spontaneous fracture.

The anatomic diagnosis was as follows: Tumor of the kidney, with extension to the right innominate bone and vertebræ, with many metastatic tumors.

Microscopic examination showed *Hypernephroma*.

The *second case* was one of a man of 55, who, in June, 1901, noticed a nodule in the alveolar process posterior to the third molar of the superior maxilla. It returned after two removals. The third removal showed "suspected cancer." It had extended to the two last molars. The growth was removed, with a considerable part of the alveolar process. Wax was used to control the hemorrhage. A small soft growth followed, when a large hemorrhage, described as "a pint of blood," necessitated the removal of the entire superior maxilla. A cellulitis developed in the wrist of opposite side, and patient died on thirteenth day. There had been an abdominal tumor found meanwhile in the case, two inches below the umbilicus, attended with some pain and feeling of weight. There is no full record of this.

Anatomical diagnosis was as follows: Metastatic "cancer" of both kidneys, of retroperitoneal lymphglands, and the gall-bladder. There is pedunculated growth almost filling the bladder. Closer examination showed that the case was really one of *Hypernephroma*, and not carcinoma at all in *all* specimens. By this case Dr. Le Count emphasized the value of careful microscopic diagnosis.

Pathological specimens from these two cases were shown.

SECOND DAY

The second day of the meeting was spent in Rochester, Minnesota, with Drs. W. J. and C. H. Mayo at their hospital.

One does not at all appreciate the abundance and quality of work that is being done there until he really goes and sees it. The great success of the Mayos must be due in great part to the thoroughness and quality of their work. This, together with the fact that everything is thoroughly systematized, each of the many departments being in charge of a highly competent man, has brought to the hospital the reputation of being one of the best in the country.

The clinic witnessed by the Society was not an "exhibition" or "show"; it was simply a large amount of good work well done. Unimportant detail was not unduly emphasized, which is so commonly seen in different clinics, with an evident desire to win praise, but important principles and methods were carefully pointed out because they had been found to produce the best results.

Considerable work had already been done by Dr. W. J. Mayo before the visitors had reached the hospital. He was just finishing a hysterectomy, and he showed his technic for preventing cystocele following a hysterectomy by suturing the ends of the round ligaments to the stump of the cervix, by this means drawing the cervix high up.

The *second case* was one of a woman of 52, with a diagnosis of *fibroid of the uterus*. Here a hysterectomy was also done, and cervix was again made fast high up into the pelvis by attaching the round ligament onto the stump. Dr. Mayo remarked that, in his experience, removal of both ovaries had never been followed by any definite symptoms, but that a short vagina and a cystocele did make a difference in the woman.

The *third case* was an operation by Dr. Charles Mayo in an adjoining operating-room. It was a case of recurrent appendicitis, with an *old adherent right inguinal hernia*, in a man of 57. The operator emphasized the following points: He does not open the external ring in hernia operations. The external oblique tendon is split from above downward somewhat to the inside of the ring, in order to preserve the intercolumnar fibers.

"Hernia of the bladder is one of the hardest to cure, and very apt to return."

"Get into the hernial sac *early*, to see what is really there and to find out how much should be removed."

"In removing fat omentum, always crush with forceps before ligating in straight line, to prevent slipping of the ligature."

"The lower part of the sac is not closed, but left open, as there is no danger from a traumatic hydrocele."

After removal of the appendix through the same incision, he emphasized the use of celloidin linen for the purse-string suture.

The stump he inverted by use of a projector with a pointed needle-tip.

"The cord in an ordinary hernia should be left alone as much as possible."

The hernia was closed by the Andrews-Girard method. Dr. Mayo emphasized the advantage of interposing muscle tissue in suturing the tendons together, as a muscle union is very quick, whereas it takes three weeks to unite tendon.

Case 3 was a *gastroenterostomy* done by Dr. W. Mayo for gastric ulcer. Moynihan's posterior operation was done, with the exception that a very short loop of duodenum was made and that the direction of the jejunum not changed. He leaves only a loop of about 2½ inches long between the pylorus and the anastomosis. The direction of the jejunum after the anastomosis is retained in exactly the same position as it naturally lies. This is ascertained by drawing the stomach, omentum, transverse colon, and mesocolon high up outside the abdomen until the loop of the jejunum appears lying in its normal position, which is found to be parallel with the large vessels on the posterior wall of the stomach. This relation is maintained after anastomosis. In making the anastomosis Dr. Mayo cautioned against removing too much of the mucous membrane. He used Bartlett's iodized catgut for closure.

He has done, up to date, about 100 of the short-loop operations, and 25 or 30 maintaining the jejunum in the above-described way.

Of less than 60 cases done by Moynihan's method, he has been obliged to reoperate upon 8 for bile regurgitation.

For the inner suture of the anastomosis he uses a continuous mattress, and the outer Lembert stitch is placed very close to the edge. He sutures the opening in the mesocolon back by three sutures to the jejunum, and carefully draws up and under the fat to prevent future adhesions running down on the bowel and making a kink.

The mortality of this operation has been less than one per cent. So far, he has had none return for reoperation done by this method.

The next operation was one done by Dr. C. Mayo, in which the *gall-bladder was removed*. He said, "Save a *good* bladder; but one that is not performing its proper functions, or one whose functions you have interfered with during the operation, or with those of the cystic duct, remove. I do not remove as many as I did two years ago. The risk to the patient is greater."

The use of iodoform gauze with selvage edge on both sides was shown.

Case 5 was an operation performed by Dr. W. Mayo. The diagnosis before opening was of *hour-glass stomach*, due to a double ulceration. It was in a man of 58 years old, who gave a typical duodenal ulcer history. It was found, upon exploring, to be an inoperable carcinoma of the stomach, and the incision was immediately closed by the celloidin linen, so that the patient can get up immediately and be sent home within two or three days. Catgut is not strong enough to allow this.

Dr. Christopher Graham, the other attending physician at the hospital, then spoke upon duodenal and gastric ulcer. He said, in part: "Fifty per cent of duodenal ulcers have been accurately diagnosed in the work here at the hospital; 75 per cent fairly well diagnosed. Some cases of gall-stone cannot be diagnosed from duodenal ulcer. A typical history of duodenal ulcer extends over several years, begins with hyperacidity and gas. Then pain comes on two or four hours after meals, which is frequently eased by taking food or drink. Later, vomiting and hemorrhage. If there is a later cancer involvement, we find the onset of bad symptoms, as pressure, persistent vomiting, decreased appetite and strength."

The question of cancer following ulcer, or "can-

cer upon ulcer," has been carefully studied by the Mayos in their work, and they have concluded from the cases of the last five years that ulcer precedes cancer of the stomach in about 50 per cent of the cases. "Cases of carcinoma with long histories speak for a preceding ulcer; with short histories, against ulcer as a precursor. Of 52 cases of cancer operated upon this year, 26 were cancer upon ulcer."

Dr. W. Mayo then said, relative to the same cases, that they had resected about 80 cases, with 12 deaths.

The mortality of the operable cases of carcinoma of the stomach is 5 per cent to 8 per cent. Four cases have lived more than three years.

He said, further, that chronic ulcer of the stomach is common, and is found in males more than in females.

"Most ulcers of the duodenum are solitary, and remain so. Medical treatment of such ulcers is almost *nil*. Ulcers of the stomach and ulcer of the duodenum are purely surgical diseases."

Dr. Mayo then showed a model of his so-called *fish-tailed tubular drain for common duct*, the advantages of which are—1. That it allows all bile which should go into the bowel to do so, thus obviating the danger of drainage of duodenal contents up into the duct; and 2. By its use and removal after 7 to 12 days, chronic biliary fistulæ are prevented.

Dr. Mayo then showed a case to illustrate his operation for *complete prolapse of the uterus*. He removes the uterus by the vaginal route, and joins together the ends of the broad and the round ligaments to make a fixed point. The point of the bladder which was attached to the anterior wall of the cervix he now attaches to this fixed point above, and the bladder is carried up high into the abdomen. He has never seen a recurrence of the cystocele after this operation.

Dr. L. B. Wilson gave an exhibition of *specimens of cancer of the stomach*, of which he had a large collection, and he said that the presence of a scar on the muscularis or mucosa outside the cancer mass is positive evidence of a previous ulcer.

Dr. M. C. Millet then spoke upon the diagnosis of *tuberculosis of the kidney*. He said that the disease is localized in one kidney very often for years. Ten per cent are found, clinically, to be double-sided. Only those cases had been operated upon which had localized symptoms. Almost universally was there a bladder involvement in such cases.

He spoke at length upon the bladder findings, the appearance of the mucosa and urethral openings.

Dr. A. P. Maschger gave an exhibition of *specimens of tuberculosis of the kidney*.

Dr. E. S. Judd then spoke upon *nephrectomy for tuberculosis of the kidney*, and gave the following facts relative to the hospital work:

They have had 13 cases this year. No mortality; average time in hospital, 16 days. The oblique incision had been used in all cases, and care had been taken against injury of ilio-inguinal and hypogastric nerves. Twelfth rib is resected, if necessary for room, and this had been done four times in 13 cases. The ureter is carbolized by 5 to 10 minims of the acid, from a syringe, and is stitched into the fascia at the lower end of the wound. The pleura had been opened in the removal of the twelfth rib in two cases. If the ureter is also to be removed, a strong ligature is tied to its end. A second retroperitoneal opening in the abdominal wall is made, through which the ureter is removed. Stretching the ligature at the upper end aids, by means of the strong ligature, greatly in the identifying of that organ through the lower opening. Fully 80 per cent of tuberculosis of the kidney cases have bladder involvement, which is shown by hyperemic spots or ulcers. The majority of the bladders do not get entirely well and free from ulcers, but are greatly benefited with relation to frequency of urination, immediately following the nephrectomy.

Dr. C. Mayo then demonstrated the Jackson incision for cancer of the breast, illustrating the method by drawings, by chamois-skin models, and by exhibiting a case recently operated upon. As a means of saving the flaps and for making the immediate drainage of the exudation which follows the removal of the mass, Dr. Mayo makes multiple stab-wounds in the flaps.

Dr. Mayo then said a few words about his operation for *excision of varicose veins of the leg*, and then gave a demonstration upon a canvas model of the continuous mattress-suture that they use for gastro- and entero-anastomoses. It is similar to the Connell suture, but "in two stages."

He then spoke of an operation for *cancer of the rectum*. He emphasized the fact that the Kraske operation is not satisfactory, and described the operation he and his brother had performed in 17 cases with 4 deaths in the last four years. An enterostomy is first done through the muscle-splitting incision at the lower end of the sigmoid. The rectum is drawn down through the perienum by the assistant, who makes a circular incision about the rectum after closing up the anus, dissecting upward, and draws down the rectum through the perineum.

Dr. Mayo said the combined operation is now known to be best. The abdominal incision and thorough examination of the glands is the first thing

to do, in order to obtain an absolute diagnosis. The artificial anus is made in such a way that the bowel assumes a sigmoid curve through the gridiron incision in the abdominal wall, so that the feces can be controlled by an external pad of gauze.

Dr. C. Mayo then spoke about his operation in the *treatment of bunions*, and illustrated it by some X-ray pictures. He said that bunions developed usually in patients having very long great toes. He cuts off the head of the metatarsal, folds in the articular synovial membrane to make a bursa, and he leaves the sesamoid bones in to support the end of the bone.

Dr. H. S. Plummer spoke upon *tuberculosis of the peritoneum*, and, among his remarks, he said as follows: The fluid form in tubercular peritonitis is found in about four women to one man; the fibroplastic form in about equal proportion. Of 98 cases that have been tapped in the abdomen for fluid, 50 per cent have returned for future tapping.

Evacuation of the fluid aids recovery by allowing coaptation and the formation of adhesions about, and shutting off the rest of the abdomen from the source of infection; i. e., the tube. Ten cases have returned for secondary operation and have been permanently cured.

The fibroplastic forms are probably due to mixed infection, probably by the colon bacillus. The treatment is, removal of the source of infection, as tube, appendix, or intestinal lesion, and the drainage of the fluid.

Dr. Willard Bartlett, of St. Louis, by invitation, then gave a demonstration of his method for the *sterilization of catgut*, that has been used by the Mayos in three thousand cases, and has therefore been well tested clinically and also bacteriologically.

The Mayos said it is the most satisfactory preparation of catgut, and Dr. Wilson, the pathologist at the hospital, has tested the gut in many ways, and in every experiment has found it sterile.

The method described by Dr. Bartlett is as follows: There are three stages: 1. Drying; 2. Sterilizing; 3. Storing. Strands of 30-inch catgut are coiled and then the coils are strung on a string, are placed on a wire gauze elevated one inch above the stove lid, and covered by a box, through the cover of which runs a thermometer. The gut stays there for one hour at 180° F., and for a second hour at 220°. This time need not be exact. The gut is then taken off and thrown into a vessel of simple, pure liquid vaselin (albolene), and allowed to stand until it has become clear, like a histological specimen. It usually is left in overnight. This is done in order that heat may be carried to the center of of the gut.

Sterilizing is done as follows: The vaselin containing the gut is put on a sand-bath, which is put on a gas-flame. The temperature of the oil is now brought up to 320 F. within an hour, and maintained for a second hour at this temperature. This temperature, also, need not be exact. It has been found satisfactory to have it between 300° and 350° as the extremes.

Storing is done by placing the gut by means of sterile forceps into a sterile jar containing 100 parts of pure methyl alcohol (Columbian spirits), in which is dissolved one part of iodine. After standing for a few hours, or overnight, the gut is ready, and can be used indefinitely. (Has been tested by Dr. Bartlett up to six months.)

The Society was then taken in small sections, by different members of the staff, through the hospital wards and laboratories. Then they were driven in carriages down to the down-town offices, where they were shown through the examining-rooms. It is at this down-town office that the patient is first received and a diagnosis is made. If the case is one that can be benefited by a surgical operation, he is sent up to the hospital. If it is not, he is sent back home. There is absolutely no medical treatment done at the offices or hospital.

The group of offices is fitted up with every known means and apparatus for making a true diagnosis, and each department is in charge of a highly competent man. All facts about the parent that can be gained (from the history) from examination of the sputa, blood, urine, eyes, and from X-ray examination are first obtained, and then are brought with the patient to one of the Doctors Mayo for final diagnosis and disposition. One has the same feeling after going through the examining-offices that he has when he leaves the hospital, that the most thorough work is being done in the most systematic way.

THIRD DAY

The last day of the session was held in Chicago. The morning was spent at Mercy Hospital, witnessing the joint clinic of Dr. J. B. Murphy and Dr. E. Wyllis Andrews.

Before his first operation, Dr. Murphy spoke about his cases of perforative general peritonitis. He has had one death out of thirty cases from all causes,—typhoid, gastric, duodenal, and appendiceal perforation. The death was from double pneumonia, 6 days after operation. His usual line of treatment is as follows:

Immediate laparotomy.

Repair of the point of entrance of the infection (the opening in the intestine or stomach).

Drainage from tube in pelvis out through the lower end of the incision, which is usually median.

No irrigation or sponging of the peritoneum during the operation.

Sitting up posture (35 degrees).

Administration of antistreptococcus serum, Créde's ointment, and continuous colonic irrigation.

The method of giving the saline by rectum he described in detail. An ordinary family syringe tube with five openings is introduced into the rectum, and a pint and a half of saline solution is allowed to trickle in under low pressure every two hours, so that it takes from forty to sixty minutes for the water to enter. In this way the patient will absorb a large amount of fluid without overdistention of bowel. Eighteen pints can be administered every twenty-four hours.

His first case for operation was a 37-year-old woman who had had gastric symptoms for 10 years. There was no palpable tumor. The stomach was found adherent in its splenic area. Some enlarged glands were found in the lesser curvature, and a diagnosis of ulcer with adhesions was made and a *posterior gastroenterostomy* was performed. The oblong Murphy button was used to make the anastomosis, and same points in technic, making the short loop (no loop) and maintaining the original direction of the jejunum, as brought out by Dr. Mayo, were here emphasized and followed. Dr. Murphy used a special forceps he has recently perfected for holding the button after placing it in bowel. Opening of the bowel and stomach was done between parallel needles, which carried the purse-string suture. This suture then draws the bowel well about the button. He makes no special removal of the mucosa at the lines of incision.

Dr. Murphy said that the oblong button takes from 11 to 13 days to come out, and seems to be more definite in its time for loosening than the round button. There is no colic during its transit through the bowel. Its greatest diameter is three eighths of an inch.

The abdominal incision was closed by figure-8 sutures through the fascia of the rectus muscle after the peritoneum and fascia had previously been closed with catgut.

Dr. Murphy said where the ulcer is high up and to the left there is less pain, and not the characteristic pain which comes two or three hours after eating when the ulcer is in pylorus or duodenum. Location of the pain and the time of the pain is significant of the location of the ulcer.

Dr. Mayo, being asked, gave it as his opinion that recurrent infection of the peritoneum from the ulcer was the cause of the attacks of periodic pain. Dr. Murphy cited a case where the colic was as severe as a gall-stone colic, and then would completely subside for three or four weeks, and as before recur. The ulcer was as large as a silver dollar.

Dr. Murphy spoke of the importance of allowing the patient to get up as soon as possible (i. e., on the third day), and in order to do this the use of something stronger than catgut is necessary for closure of the abdominal wound.

His next case was one of *double femoral hernia*. In this, as well as in some of the following cases, his gutta-percha solution was used to cover the skin of the operating field, and was described as merely a four-per-cent solution of gutta-percha in acetone to fix the epithelial cells as a prevention of infection from the skin.

During the operation, he said: "To get the best exhibition of the tissues, cut directly over and at right angle to Poupart's ligament, then elevate Poupart's ligament to dissect out the sac. The dangers in these hernias are from protrusion into the sac of the caput coli, or bladder, or sigmoid. After ligating the stump of the sac, it is fixed to the inner side of Poupart's ligament by a suture going through it from within out through the ligament. The femoral opening is closed by drawing up and over it a bit of fascia and the pectineus muscle just to the inner side of the ring."

The next operation was one by Dr. Andrews, upon a case of *cancer of the stomach*. It was found that the stomach was adherent to the abdominal wall in the middle of the cancerous mass, and in attempting to free this from the abdominal wall the stomach was torn open. The opening was then inverted with the surrounding ulcerating carcinomatous mass, and a *gastroenterostomy* was performed by McGraw ligature.

Dr. W. Mayo was asked about his experience with the McGraw ligature, and he said that he had given it up because action was too slow.

Dr. Murphy then performed the preliminary operation on a case of *spina bifida* with hydrops of the ependyma with a mild hydrocephalus and paraplegia. This first step was the injection with a hypodermic syringe of ten drops of Morton's fluid to stop excessive secretion. This is to be followed after two weeks by resection of the dilated fibers of the cord, and end-to-end union of the fibers or columns of the cord with catgut. The lesion is at the first lumbar vertebra.

Dr. Hart, of the Society, reported a case of reuniting of the cord at operation after its complete severance by a bullet, and restoration of function to a great extent—the first case of successful suture of the cord after complete division.

The fourth case was that of a farmer of 21, which had been sent into the hospital as a gall-stone case. Dr. Murphy said that the case was especially inter-

esting, because the abdominal symptoms were not definite, and that it had been found that the patient had a beginning spondylitis in the lower dorsal and upper lumbar regions. He emphasized the fact that in tuberculosis the spine bends in the direction of softening of the *body* of the vertebræ, in contrast to rheumatoid arthritis, in which the processes more often than the bodies are involved, and in the greatest percentage of which there is an anterior curvature. The final diagnosis of the gall-bladder, stomach, or duodenum cannot be made in this case before an exploratory laparotomy. This was thoroughly done, and absolutely no pathology was found, except that the gall-bladder would not empty, even under strong pressure. He fastened the bladder up into the wound by suturing through the connective tissue that joins the tip of the bladder to the liver peritoneum. He then closed the peritoneum and the fascia of the whole length of the wound and then opened the gall-bladder and explored it. No stones were found, and a drainage-tube was introduced.

He said that it was not uncommon not to be able to feel a stone present in the bladder when pressure will not empty the bladder, and he recited a case where over 900 stones were removed from a bladder which could not be identified before the bladder was opened. He then spoke of the value of cystoscopic examination of the bladder after the fistula had been permanently established.

The next case (fifth) was one of *trifacial neuralgia* in a man of 62, giving a typical history of involvement of all the branches. Dr. Murphy injected the supraorbital, the infraorbital, and the mental branches at the foramina with 1½ per cent solution of osmic acid. In relation to the supraorbital branch, he called attention to the fact that the nerve is frequently found, not in one trunk, but in several. Sometimes there are as many as 10 filaments. The infraorbital and mental branches are reached from within the mouth, incision being made for the former in the fold between the upper lip and the alveolar process, and for the latter by a corresponding incision below. These incisions are closed up without drainage, to be opened again if necessary, as suppuration does sometimes occur from the mouth infection. The infraorbital and mental foramina are injected by the solution as well as the nerve trunks. No absolute assurance of good permanent results is given to the patient from the osmic acid treatment. The temporary relief, though, is immediate, and the results are as good as, if not better than, those of evulsion. Dr. Murphy says he is afraid of the ganglion operation, because of the great amount of attendant shock and because of the uncertainty of removing all the ganglion. The mortality of ganglion excision is about 30 per cent.

Case 6 was one of an immense *abdominal tumor*, the exact diagnosis of which Dr. Murphy had been unable to make. "The point of greatest resistance is in the neighborhood of the liver, but there is no definite line of facts on which to anchor the diagnosis. The patient has had no special uterine symptoms, nor kidney symptoms, nor anything else, except a diarrhea. No amœba have been found in the feces. The tumor was solid, and extended from the pelvis, and pressed against the costal arch, and was nodular.

The abdominal wall was opened just to the left of the median line, and before the enormous tumor could be delivered, the incision had to be carried up nearly to the border of the ribs. It proved to be a fibroma arising out of the subperitoneal fundus of the uterus. Myomectomy was performed and the mass removed with preservation of the uterus and tubes.

Dr. Murphy called attention to the value of amputating in a hysterectomy from behind forward and clamping the uterine arteries after they are exactly identified, which method avoids the previous use of clamps, and therefore a possible cutting of a ureter. It very much simplifies the technic and saves much time.

In the afternoon the Society went to the physiological laboratory at Chicago University, in order to see a demonstration by Dr. Alexis Carrel, who has done considerable work upon transplantation of viscera and vessel anastomosis.

Four dogs were presented. On the first one, the anastomosis of the central end of the carotid, to the peripheral end of the external jugular vein, was made fifty-seven days ago. The reversal of the circulation through the jugular was obtained. To-day, strong pulsations and noisy thrill are perceived, by the touch, in the jugular vein.

The second one presents a double reversal of the circulation through the carotid artery and the jugular vein, the central end of the carotid being anastomosed to the peripheral end of the jugular, and the peripheral end of the carotid to the central end of the jugular. From a physiological standpoint, the artery is transformed into vein, and the vein into artery.

The third dog had a double parenchymatous goiter. Fifty-two days ago the inferior thyroid vein of the right goiter was dissected and transplanted on the carotid artery. Then a very active red circulation was established through the veins of the gland. Now they pulsate like arteries, the goiter is smaller and harder, and the thyroid functions seem to be awakened.

The right thyroid gland of the fourth dog was extirpated and replanted with reversal of the circulation thirty-nine days ago. At the present time it is easy to perceive, by the touch, the systolic expansion of the gland, which is subcutaneous. The circulation is very active.

Afterwards a demonstration of the method of suturing blood-vessels was made on the carotid artery of a dog.

At Passavant and Cook County hospital, the Clinical Society attended clinics by Dr. M. L. Harris. The following operations were performed:

1. Ureteral calculus lodged in the upper part of the ureter below the kidney showed method of reaching the ureter extraperitoneally and of longitudinal closure of incision in the ureter.

2. Method of shortening round ligaments of the uterus, and closure of the abdominal wound, with longitudinal wire sutures.

3. Method of resection and shortening of the puborectalis muscle in relaxation or laceration of the pelvic floor.

4. Removal of tumors of the neck, probably of parathyroid origin.

ABSTRACTS OF CURRENT LITERATURE

DEPARTMENT OF SURGERY

UNDER THE CHARGE OF

JOHN B. MURPHY, M. D. — E. WYLLYS ANDREWS, M. D.
FREDERIC A. BESLEY, M. D — WM. R. CUBBINS, M. D.

CONCERNING SUBCUTANEOUS AND PERI-ARTICULAR CALCIFICATIONS. By Dr. Felix Lewandowsky.

The woman affected in this manner was fifty-seven years old, with practically a negative family history. For the last five years she had noticed that her fingers swelled each autumn, became blue, cold, and stiff, and lost their normal sensation. In the following spring this discomfort gradually disappeared again, and each summer she would experience no inconveniences of this sort. During the last two years she has been discovering small, hard, painless nodules under the skin, first of one forearm and later of the other. Since one year she has had pains in her left shoulder-joint, which prohibited some movements.

Physical examination was absolutely negative, excepting the skin and the joints. The fingers of both hands were equally enlarged and the swelling was hard and non-compressible. The skin of the joints in the fingers was a pale blue color and the normal wrinkles over these articulations have been wiped out. In the phalangeal joints there was permitted only slight motion. Sensations of temperature, touch, and pain were reduced, but no paresthesias were present. Over the ball of the tip of the fingers there were a number of dark red spots, which later became gangrenous and were thrown off. On the extensor side of both forearms there were seen a number of round, flat prominences, over which the skin was of normal color, excepting a few slightly reddened areas. Palpation revealed that the protrusions were caused by the deposit of foreign matter of hard consistence. They lay beneath the true skin, and most of them could be moved over the underlying tissues. In the left shoulder, nothing could be demonstrated on palpation, but when passive movements are undertaken there is some blocking and considerable pain. The patient complained of pains in the legs, but no pathological condition could be noticed.

To render the diagnosis secure, X-ray pictures were taken of all of the body, excluding the skull. The result was remarkable. Shadows were visible between bone and skin, corresponding to the diseased parts, which could only be deposits of calcium or true bone. They were of irregular form, and seemed to be made up of many smaller components. Everywhere the contour of the bone was sharp, showing the deposits to be free from it. The most striking appearance is presented by the radiograph of the left shoulder-joint. Here, where nothing was demonstrable on palpation, the whole joint region was covered in a manner corresponding to the capsule. The sharp demarkation of the various bones leading to this articulation dispelled any idea of a process springing from the bone itself. The right shoulder, which, objectively, gave no symptoms, showed a similar process in its incipiency. Excepting a few possible deposits in the feet, the lower extremities were negative. Behind the manubrium sterni and over the tubercle of the first rib, there was discovered in each location a similar formation.

To determine the histological and chemical nature of these deposits, some were excised. One large one removed from near the olecranon was discovered to be formed of calcium carbonate, with traces of calcium phosphate. No urates were recovered. Several small accumulations were removed with the overlying skin, and imbedded and cut. These calcium masses were found in large masses of three to four millimeters in diameter, or as very small scattered particles of hardly four microns in size.

Concerning the nature of the disease, little can be said. Two theories are advanced, the parasitic and the diathetic. For neither one is there sufficient grounds. No organism has been found, though some doubtful results have been obtained by inoculation experiments. The histologic structure of the nodules is also in no way typical of an infectious granuloma. The similarity of the

disease to gout lends some color to the notion of a diathesis. Many similar cases are reviewed and discussed.—*Virchow's Archiv.*, bd. clxxxi, heft 1, 1905, p. 179.

A CONTRIBUTION TO THE TRAUMATIC DISEASES OF THE PANCREAS. By Dr. Robert Hilgermann.

The relation between trauma and tumor formation has become more and more important, and every fact is of interest that shows such relation, especially for the pancreas. Because of the supposedly rare injuries of this organ, except fatal ones, this relation seemed remote in the consideration of neoplasms of that viscus. Only within recent years has this infrequency of such lesions been shown to be erroneous, for such injuries are not uncommon, and are sometimes limited only to the pancreas. Especial interest attaches to malignant new growths which follow an injury. In order that a case be genuinely of that character, the tumor must not only develop at the place where the trauma had taken effect, but one must by a combination of symptoms bring the disturbances of the functions of that organ into relation with the tumor.

The reported instance concerned a fifty-year-old man with a history that was negative, except for an inflammation of the cecum fourteen years previously. About eight months before his appearance, he had experienced a severe fall, striking his abdomen, after which, however, he had no inconveniences. For two months before coming for medical advice, he had complained of loss of appetite, and pains which began suddenly in the region of the umbilicus, which lasted some hours, and then omitted a few days, only to return again. There was no vomiting or icterus. This intermittent period continued for about one month, after which came an interval free from any pain. But for the last three weeks before his appearance in the clinic, the pains have returned with more severity and with occasional icterus.

On examination, a tender tumor was discovered in the right side, below the edge of the liver. Investigation of the stomach contents revealed only a slight reduction of acidity, while the other gastric functions were normal. Because the pains grew more intense, an operation was undertaken by von Mikulicz, at which a tumor was discovered, belonging either to the pancreas or to the duodenum, but nothing was done except to unite the enlarged gall-bladder to a loop of the jejunum. The patient died of pneumonia and multiple lung abcesses, and at the autopsy a primary carcinoma of the head of the pancreas was revealed, with compression and invasion of the gall-duct and of the duodenum. No other secondary growths were discovered There were also a dilated stomach, a stasis icterus of the liver, and a firm adhesion of the pancreas to the stomach.

The histologic nature and pathogenesis of the tumor formation are discussed liberally to prove the process not to be a chronic inflammatory one, as was the first impression. An attempt is also made by the author to show the causative relation of the trauma eight months previous to the development of the tumur. He cites the development of cysts of the pancreas after traumas, and brings forward as an argument for the traumatic nature of his case the adhesion of the pancreas to the posterior wall of the stomach. Failure to find traces of blood pigment in the regions assumed to have been crushed is explained by the rapid absorption of such extravasations, and data are supplied to prove this point. In addition, the gradual growth of the symptoms in a previously healthy man are easily explained by the carcinomatous growth, and with the other organs diseased only secondarily, the conclusion seems inevitable that the trauma to the abdomen was the direct incitive agent of the neoplasm.—*Virchow's Archiv.*, bd. clxxxi, heft 2, 1905, s. 276.

A STUDY OF INFECTION OF THE KNEE-JOINT. Based upon an analysis of 310 cases. By Carleton P. Flint, M. D.

This writer has not included tuberculous gonorrhœal knees and those infections occurring with ostemyelitis of the tibia and femur in his exhaustive analysis of cases of "surgical infection" of the knee-joint.

Particular stress is placed upon our lack of knowledge relative to the bacteriology of knee-joint, which present all the cardinal symptoms of an infection, yet do not require drainage.

The author divides the cases analyzed into five groups:

(*a*) Clean knees operated.

(*b*) Penetrating wounds of the knee-joint.

(*c*) Primary in knee without evident port of entrance.

(*d*) In the course of evident infections elsewhere.

(*e*) Following some trauma (non-penetrating).

The statement is made that drainage is not always necessary, even if the fluid is turbid, and that such fluid is often found to be sterile. In such cases repeated aspirations are sufficient to perfect a cure. If a radical operation is required, care should be taken to drain all the pockets. The writer believes that any anterior incision but poorly drains the joint, and advises liberal incisions, aiding drainage later by placing patients on their face.

A careful summary of the cases analyzed, with the various percentages, is given as follows:

Non-penetrating injuries, penetrating injuries traumatic or operative, and knees independent of an injury in the course of some other infectious process or not, may present signs and symptoms not to be distinguished in the absence of bacteriological examination from the cardinal signs and symptoms of infection.

Certain of these cases are undoubtedly infected, but the *data* at our command do not allow us to distinguish these from such as may be due to trauma and those possibly due to toxins secondary to infection elsewhere.

The knee-joint has certain germicidal powers.

One out of every 22 operations upon clean knees becomes sufficiently infected to demand operation (4.6 per cent).

One out of every 9 operations for recent (5 days) traumatic non-penetrating injury becomes sufficiently infected to demand operation (11 per cent).

One out of every 35 operations for pathological conditions, other than traumatic injuries for more than 5 days old, becomes sufficiently infected to demand operation and draining the joint (2.9 per cent).

One out of every 22 operations for simple fracture of the patella done after the fifth day becomes sufficiently infected to demand operation. (1.2 per cent.

One out of every 9 to 10 operations for fracture of the patella done before the fifth day becomes sufficiently infected to demand operation (10.5 per cent).

Three out of every 5 cases of penetrating injury to the knee-joint become sufficiently infected to demand operation (60 per cent).

Certain knees subjected to non-penetrating injury, and not operated, become sufficiently infected to demand operation (10 per cent of the septic cases).

Certain knees become sufficiently infected to demand operation where no history of trauma exists or evident septic focus in the body (13 per cent of the operated septic cases).

Of compound fractures of the patella, 7 out of 9 become sufficiently infected to demand operation (78 per cent).

Certain knees become sufficiently infected to demand opening and draining the joint in the course of some evident focus of infection elsewhere in the body (11 per cent of the operated septic cases).

One out of every 9 infected knees which have been opened and drained dies (11 per cent; some after previous amputation).

One out of every 15 infected knees which have been opened and drained comes to amputation before recovery (6.6 per cent).

One out of every 31 infected knees which have been opened and drained is resected (3.3 per cent).

Most knee-joints which have been infected, opened, drained, and recovered, show varying degrees of functional disability, from slight limitation of motion of complete ankylosis, with or without subluxation.

The average stay in the hospital of an operated infected knee-joint is between two and three months.

When it is once determined to open and drain a knee-joint, the operation should be as radical as possible at the start.

The position of the leg should be that giving the best mechanical drainage; i. e., the patient should be face down.

The risk of infection is greatest in penetrating wounds of the knee (60 per cent).

The risk of infection is least in operations upon the clean knees and where there has been no recent trauma (3 to 4 per cent).—*Annals of Surgery*, Oct., 1905.

THE CHOICE OF METHOD IN OPERATING UPON THE HYPERTROPHIED PROSTATE. By Willy Meyer, M. D.

Under the above title the author presented an exhaustive paper to the Chicago Medical Society. Several characteristic cases are cited to illustrate the advantages of the selection of the method most adaptable to the condition of the gland.

A detailed description of the technic employed in the suprapubic operation is given.

The following summary is deducted:

1. We have to-day three useful methods for the operative relief to prostatic obstruction; i. e., suprapubic and perineal prostatomy (Bottini's operation).

2. Unassailable proof has been furnished to show that all three methods deserve to be recognized as standard procedures, each being capable of bringing permanent relief.

3. Wherever the patient's condition, irrespective of age, seems to warrant it, prostatectomy should be done, since the total removal of the mechanical obstruction naturally represents the most surgical procedure.

4. While it is true that either method, perineal or suprapubic, can be successfully employed to the exclusion of the other in removing the hypertrophied prostate gland, it certainly means facilitating our work, and is in the interest of the patient, if we use both procedures, choosing in each instance the one that seems best

suited to the particular case. The selection of the route, on strict indication, is not an easy matter at present. Further reports by surgeons practising both procedures are needed to decide the question. Both methods are excellent and useful ones. The choice up to the present time is largely a matter of individual inclination. Perhaps we are warranted in saying, on basis of our present experience:

a. Glands palpable per rectum, and rising not far from the sphincter ani muscle, can be advantageously attacked from below.

b. If situated higher up, and if the growth projects well back into the bladder, they should be enucleated from above, all the more if the cystoscope has shown the presence of a median lobe.

c. A hypertrophy of soft character in the early stages, so frequently found to be made up of a number of smaller nodules, each of which can be enucleated by itself, is best attacked from below.

d. In the 33 per cent of cases in which no tumor is palpaple per rectum, but in which vesical enlargement is recognized by the residual urine or total retention, and seen distinctly by means of the cystoscope to be the obstructing cause, the suprapubic route deserves the preference.

e. If the enlargement be complicated by a vesical calculus or calculi of larger dimensions, too large to be easily extracted through the dilated internal sphincter muscle, the suprapubic route is indicated.

f. In patients with a very foul urine, where immediate drainage of the bladder is imperative, the suprapubic incision should be chosen. The gland may be removed at a second sitting.

g. The comparatively frequent appearance of carcinoma of the prostate may prove to become an important factor in deciding in favor of complete removal of the gland from above.

5. The question of the preservation of sexual power is an important one. Further experience and investigation are needed to enable us to definitely determine whether there is any difference in results as to this point between the two methods of operation. As it seems today, the surapubic operation is superior in this respect to the perineal method, even though in the latter the portion of the gland immediately surrounding the prostatic urethra and the ejaculatory ducts have been preserved. If future statistics should prove that with suprapubic prostatectomy the sexual function is more frequently preserved than with the perineal procedure, this must necessarily decide the choice of route in patients in whom this point has still to be considered.

6. If operation with the knife be refused, or there be contra-indications to such interventions, Bottini's operation is in order.

7. Only if this operation, too, be refused or impossible are we justified in relegating a patient to the regular use of the catheter.

8. Cystoscopy is absolutely necessary before doing Bottini's operation; it should also precede perineal prostatectomy in order to enable us to determine the presence or absence of a median lobe and calculi; it may be dispensed with if the suprapubic operation has been decided upon, although a previous, distinct knolwedge of intravesical conditions must be welcome to the operator. In that 33 per cent of prostatics who present no enlargement on rectal palpation, the cystoscope alone can establish a distinct and refined diagnosis.

9. The time of operation, at least in the rank and file of prostatics, has come when regular catheterization has become imperative. The catheter should not be intrusted to them for regular use. Well-to-do patients, being in a position to take the time and care necessary for the carrying out of self-catheterization on aseptic principles, may be allowed to do so if opposed to operative intervention.

Another strict indication for operation is persistent severe pains in the perineum, neck of bladder, and glans penis, resisting ordinary treatment.

10. Surgeons should familiarize themselves with perineal and suprapubic prostatectomy, as well as with galvano-caustic prostatotomy (Bottini's operation), in order to be able to do justice to the prostatics intrusting themselves to their care, for no one method of operation can be employed in all cases of prostatic enlargement to the best advantage of the patient. In other words, we must select the operation that suits the case.—*Medical Record*, Oct. 7, 1905.

ABSTRACTS OF CURRENT LITERATURE

DEPARTMENT OF GYNECOLOGY

UNDER THE CHARGE OF

J. CLARENCE WEBSTER, M. D. E. C. DUDLEY, M. D.
JOHN C. HOLLISTER M. D.

FIBROMA AND CARCINOMA OF THE UTERUS. By G. Piquand.

Of late there has been much interest again among surgeons in searching for the causes for the coincidence of fibroma and cancer of the uterus. It is of great importance, from a therapeutic standpoint, to know if a fibroma predisposes to carcinoma.

The author, by assembling all the known facts possible, by reviewing cases published, etc., has attempted to find out the relation of the two, to ascertain the frequency of cancer coincident with fibromatosis, and to ascertain how the one condition favors the other, if at all, and how an early diagnosis can be made of the appearance of malignancy.

Under an historical heading the author gives a review of the work done on the subject, and the different opinions held by different observers. This is thoroughly covered. The many contradictions are due to the fact that the numerous authors have considered the subject from different standpoints, and have assembled in one description cases absolutely different.

Study of the reports published show two facts:

1. There can be in the uterus simply a simultaneous development of a fibroma and a carcinoma, the two remaining absolutely isolated.

2. The cancer elements—epithelial cells—can develop in the fibromyomatous mass.

DEVELOPMENT OF AN EPITHELIOMA IN A FIBROMYOMA

He says Cruvielhier's statement that the development of an epithelioma in a fibroma is impossible is wrong, for he has collected 45 cases where this has occurred. (The full list is noted.) He says: "We have been able to study 3 cases of invasion of a fibroma by an epithelioma of the uterine mucosa, and have collected 14 analogous cases in the literature." An account of these follows. Cases where a subperitoneal fibroid has been invaded by an epithelioma which developed in a neighboring organ are reported.

"Metastatic cancers in a fibroma which come in by the lymphatic from some distant cancer center are very rare, but they exist." He reports a case.

DEVELOPMENT OF A PRIMARY EPITHELIOMA IN A FIBROMYOMA

He quotes Cornil's case in full, and then gives abstracts of 23 others, and in the discussion following he gives the different views held as to whether the elements of a fibromyoma are transformed directly into epithelial elements, and says: "The only way to explain the development of an epithelioma in the fibromyoma is to admit that there are in the fibromyomatous tissue epithelial elements susceptible of developing themselves and proliferating and giving rise to a malignant tumor. This theory is confirmed by a large number of observations, which have shown in an absolute way the presence of epithelial elements in the interior of a fibromyoma."

THE ORIGIN OF THE EPITHELIAL ELEMENTS

"Many theories have resulted from much discussion. It seems to us that the origin is complex. The epitheliomata developing in the center of a myoma could indicate a possibie double origin:

1. From development of embryonal *débris* caught in the uterus during development;

2. From the development of a glandular *cul-de-sac* of the uterine mucosa.

1. The first is emphasized especially by Recklinghausen (1894-96), whose observations are quoted in detail. He came to the conclusion, that all glandular elements of an adenomyoma came from *débris* of the Wolffian body; that the glandular formations of adenomyoma of the body of the uterus developed from the paroöphoron; that those of the neck come from "des canaux de Gartner." Many agree with him, and their views are given; and, on the contrary, several investigators are mentioned

who think the glandular formations come from the canal of Müller. The whole question is carefully discussed, and then the author says: "It is very probable that the two opinions are partially true, and that the anomalies of development of Müller's canal, as well as the persistence of remains of the Wolffian body, can explain the presence of epithelial elements in the uterine wall capable of development, and giving rise to tumors the hybrid constitution of which brings up the discussions and different hypotheses."

2. GLANDULAR FORMATIONS OF MUCOUS ORIGIN

Recklinghausen, Schroeder, Newmann, Schottländer, Leguen and Marien, Baldy, and Longcope are all quoted in this subject, and cases are described. Then the author says: "From these various works we can conclude that the glandular elements included in a fibromyoma show a double origin." In the one case, developed chiefly at a distance from the uterine cavity, particularly in the subserous myomata, they take on an irregular form, twisted and ramified, which is like the disposition of the tubes of the paroöphoron resulting from the proliferation of remains of the Wolffian duct, or possibly of Müller's duct. In the other, developed chiefly in the interstitial myomata not far from the mucosa, they come from that mucosa, and simply depend on it. Whatever their origin, the epithelial elements of the myoma can evolve in different ways. They can atrophy, and even completely disappear, extinguished by the proliferation of the fibromyomatous tissue. At other times these elements can multiply and form cystic cavities, at times very large, which press back more or less completely the uterine tissue (cytoadenomyomes). Finally, the glandular elements can proliferate and degenerate, and give rise to a malignant epithelial tumor, which develops in the midst of the fibromyomatous tissue, and can be imputed as an epithelial transformation of that tissue."

Then he says: From this report, so far we can conclude—

1. The development of an epithelioma in a fibromyoma is rare, exceptional even, but it is possible, and we have been able to collect 45 cases.

2. In cases of secondary epithelioma, most often the fibroma has been invaded by a cancer in the neighborhood, almost always by one from the uterine mucosa, rarely from a neighboring organ, particularly from the ovary. In very rare cases a fibroma can be the point of lodgment of a neoplastic embolus coming from a distant cancer by the lymphatic stream.

3. THE DEVELOPMENT OF A PRIMARY EPITHELIOMA IN THE MIDST OF A FIBROMYOMA has been observed, although not by a large number of authors. "We have collected 24 cases, the most of which appear absolutely indisputable. To explain this, one need not think that there has been a transformation of fibro-muscular elements into epithelial cells, but it is necessary to admit that in certain cases the fibromyomatous tissue contains epithelial elements which can proliferate and form a malignant tumor. These elements can be either remains of the Wolffian or Müller's ducts, or more often can come from a proliferation of a *cul-de-sac* of epithelium from the uterine mucosa, which can force itself into the fibromyomatous tissue, and, becoming separated by itself, can finally proliferate irregularly and produce a primitive epithelioma in a myoma.

CO-EXISTENCE OF FIBROMA AND EPITHELIOMA

"Such cases are more frequent, and here comes in the question as to whether the presence of a fibroma plays any role in the malignant degeneration of the uterine mucosa." He separates such cases as follows:

1. Co-existence of fibroma and cancer of the uterine body.

2. Co-existence of fibroma and cancer of the neck of the uterus.

I. FIBROMA AND CANCER OF THE BODY.—"Not rare. We have collected 179 cases. The co-existence has been explained in two ways by the authors who have studied the question:

(*a*) Fibroma predisposes to cancer of body.

(*b*) Simply a coincidence.

The statistics of some 17 authors follow as to the coincidence of the two. The author's total is, that, out of 3,230 cases of fibroma, 96 were attended by cancer,—48 of body and 48 of neck, or 30 out of 1,000,—or 3 per cent. On the other hand, the author finds from 166 cases that 25 per cent of cancer of the uterus cases are accompanied by a fibroma.

"The average statistics (some of which are very contradictory) show that fibroma occurs distinctly more often in women with cancer of the body (25 per cent), than in case of elderly women in general (5 per cent).

"Cancer of the body appears to be, then, 8 or 9 times more frequent when there is a fibromatosis, than when there is not; and *it seems to us that we must justly conclude that fibromata predispose to cancer of the body of the uterus.*

"Again, from the different statistics, we find an average of 17 cancers of the body to 100 uterine neoplasms. Therefore, in a general way, cancer of the neck is at least five times more frequent than that of the body, while, when there is present a fibroma, the number of cancer of the neck and

cancer of the body cases are about the same. Therefore one may conclude that fibroma actually predisposes to cancer of the body."

In explaining how a fibroma favors the occurrence of a body cancer, he explains by—

1. Mechanical disturbances set up by the fibroma—degenerations of mucosa—displacements, etc.
2. Circulatory disturbances.

Changes analogous to those of gestation are present, and the uterus is the seat of constant and prolonged irritation, and therefore a high degree of congestion, and therefore a glandular endometritis is produced.

(Changes in the mucosa are illustrated by drawings.)

3. The chronic glandular endometritis by progressive transitions, due to continued irritation of the tumor forms an atypical adenoma, and then carcinoma, by regular and then irregular proliferation.

The above steps in the process the author has found in examining a large number of cases of his own and of others, and he says he has proved the transformation of a benign adenoma to an epithelioma to be true.

"*Cancer of the uterine body is much more frequent in cases where there is a fibroid, than in other cases; therefore the fibroid predisposes to cancer of the body. Fibroma favors the occurrence of cancer in determining the lesions of hypertrophic metritis which are susceptible of being transformed into an epithelioma.*"

Conditions favoring appearance of cancer of the body in fibroma cases are:

1. Age.

" Exceptional before 45; maximum between 50 and 60. Of 84 cases, 57 had passed the menopause. (Argument against waiting for fibroma to disappear at menopause.)"

2. Parentage.

"The fibromatous nullipara appear more liable to development of cancer of the body."

3. Race and heredity.

" No definite conclusions can be drawn."

One hundred and seventy-nine observations are then followed of fibroma with cancer of the body of the uterus.

II. FIBROMA AND CANCER OF THE NECK

It is difficult here to tell whether the presence of both is a coincidence, or whether the fibroid predisposes to the cancer of the neck. Cancer of the neck is five or six times more frequent in women not having fibroids, and from this we can conclude that a fibroid does predispose to cancer of the body, but not of the neck.

Many authors refuse to see anything more than a coincidence, and say that women with fibroids are usually sterile, and therefore are not subject to tears, etc., which predispose to cancer. The author does not agree with this, and thinks there is an etiological relationship. His figures show that cancer of the neck is found 5 times to 1,000 fibroma cases. Fibroids have a role in malignant degeneration of the neck, as they do in the body, by creating from a distance a place of least resistance in the neck. This is done by —

(*a*) Modification in circulation;

(*b*) Chronic irritation.

Fibroma which is nearest to the mucous membrane is the one most often complicated with cancer, but also subperitoneal fibroids, due to mechanical nutritive disturbances, are produced. The subperitoneal tumors, becoming larger, rise above the pelvis, and therefore the uterus is lengthened and cervix is stretched; also, they act by their weight when patient stands, provoking in the neck a chronic irritation. Interstitial tumors of the anterior wall act more directly by pushing the neck back and up to the hollow of the sacrum. If on posterior surface, neck is compressed against pubis.

The normal circulation is so disturbed by presence of the fibroid there is a general hyperæmia of the whole uterus; therefore hemorrhages and hydro—and leucorrhœa. There follows a profound modification of the mucous membrane of the neck, and it is therefore rendered more susceptible to malignant changes. This is proved by definite case pathological findings, in which he finds cancer of the neck most often develops at the expense of the pavement epithelium, and this does *not* remain intact, as many say.

The pathological conditions are similar to those of cancer of the body with fibromata.

Cohnheim's theory that the cervix is a " place of least resistance" by nature because it is a seat of formative complications is referred to and emphasized, but the author thinks it complicated.

Accessory causes are —

1. Age (56 cases).

Rare before 40; maximum frequency, 45–50; rare after 50. Of 56 cases, only 4 had passed the menopause.

2. Parentage.

" Of fibromatous women, nullipara are more susceptible to cancer of the body, and multipara to cancer of the neck."

As to whether the stump after a partial hysterectomy becomes subject to malignant changes, he says it *can* occur. In all, some 50 cases are on record, and the occurrence is therefore very rare, which is naturally so, as the disturbing cause — presence of the fibroid — has been removed.

Figures are very unreliable, as the exact condition of the stump is not known at the time of the myomectomy.

Observations on 137 cases of coincident fibroma and cancer of the neck follow:

III. CLINICAL SYMPTOMS (TWO PHASES)

The first stage is that of fibroid alone, and is characterized by — 1. Metrorrhagia; 2. Leucorrhœa; 3. Pain; 4. Feeling of weight; 5. Increase of size of abdomen.

The second stage is when the fibroid is complicated by the cancer and is characterized by — 1. Age (past menopause); 2. Loss of weight and strength; 3. Constant discharge; (hemorrhage abundant, and often continuous; becomes, later, of foul odor and less bloody); 4. Late pain (shows profound invasion of epithelium, often excruciating).

When of body, clinical findings of cancer are late; shown only by microscopical examination of scrapings.

When of neck, vegetations, ulcerations, etc., point to cancer; fetid discharges.

Progress of a uterine cancer complicating a fibroma is more often extremely rapid, especially in cases of cancer of the body. Almost always the lesion is found inoperable within a few months after appearance of the first symptoms of malignancy.

PROGNOSIS

"Frightfully grave." Intervention is laborious, difficult, and almost always followed by recurrence. The earlier the operation, the longer the time before recurrence. Ehrendorffer reports a case well at end of 1½ years; Quénn, a case well at the end of 3 years; and H. Spencer, a case well at the end of 8 years.

CHOICE OF METHOD OF INTERVENTION

I. Vaginal hysterectomy.

25 cases fibroma and cancer of neck: 23 recoveries, 2 deaths.

20 cases fibroma and cancer of body: 2 deaths.

Therefore, 9 per cent mortality.

But this operation is abandoned by most authors, because — 1. Glands cannot be also thoroughly removed; 2. Often very difficult to deliver large tumor.

II. Partial abdominal hysterectomy.

19 cases, in none of which was the cancer recognized until after operation. Recurrence was rapid, as a rule, and it would be advisable to remove the neck secondarily in such cases.

III. Total abdominal hysterectomy.

52 cases with cancer of neck, with 9 deaths.

68 cases with cancer of the body, with 11 deaths.

Therefore, mortality 17 per cent.

This is the operation of choice, for it alone permits free removal of neoplastic tissues and retards recurrence as long as possible.—*Ann. de Gyn. et Obstet.*, July, Aug., and Sept., 1905.

ABSTRACTS OF CURRENT LITERATURE

DEPARTMENT OF OBSTETRICS

UNDER THE CHARGE OF

C. S. Bacon, M. D. Rudolph W. Holmes, M. D.

C. v. Bachellé, M. D.

The Topography and Technic of Subcutaneous Hebotomy. By H. Sellheim.

When hebotomy and symphseotomy were done under the guidance of the eye, it was easy enough to perform the same according to the usual surgical technic, but in the use of Doederlein's method, ocular supervision and exact hemostasis are sacrificed. The technic as follows was employed in three cases: A small skin incision over the tubercle of the pubic bone; introduction of the Doederlein needle along the posterior wall of the pubic arch, guided by the gloved index finger; perforation close to the inferior border of the pubic bone and near the labium majus, the needle then brought out through a small counter-opening; the Gigli saw following this track, sawing of the bone; immediate suture of both wounds with catgut; no drainage.

In each case, after the bone was cut through, a considerable hemorrhage occurred from the upper wound, and a lesser amount appeared below. This was controlled by tamponade with gauze sponges. In the first two cases, after the operation a hematoma the size of a goose-egg developed about the cut ends of the bones. This disappeared almost entirely during the first or second week, without causing temperature. In the third case the hematoma reached the size of a fist, and in the first week showed no decrease in size, while on the fifth day the temperature reached 38.5° C. After the eleventh day it remained normal. The tumor rather suddenly decreased perceptibly about the eighth day, and simultaneously a swelling appeared on the posterior surface of the left thigh, extending from the lower border of the gluteal muscles to the middle third of the thigh. This became black and blue, the tumor lasting up to the thirteenth day.

Examination on the sixteenth day showed the ends of the bones separated about one finger-breadth, but with a firm bony union. The patient got out of bed on the fourteenth day, but developed a thrombosis of the left femoral vein on the twentieth day. However he believes it doubtful whether the hebotomy was an etiologic factor in the production of the thrombosis, though both occured on the left side.

The temperature was ascribed to the hematoma, since no other cause for it could be found, but it impressed upon his mind the fact that such hematomas may lead to more serious trouble.

The hemorrhage encountered on sawing through the bone caused him to investigate the anatomy of the blood-vessels of this region, the result of which led him to make certain rules as to the technic. The bleeding from the skin incision is insignificant. The finger and the Doederlein needle push off from the posterior surface of the symphysis an arterial plexus of good size, which is fed by branches from the epigastric and obturator arteries. The careful introduction of the needle pushing off this plexus avoids hemorrhage. The saw should not approach the obturator foramen too closely, lest the obturator vessels be injured; the safe distance from the median line is within 2 cm. The hemorrhage from the bone is just as severe, whether the incision is close to the median line or 1 to 2 cm. away from it, and then, too, the saw cannot be placed with extreme accuracy. Anteriorly and below the body of the os pubis is a plexus of veins which is wounded by the saw just as it cuts through the bone, as was indicated in these cases by the severe hemorrhage at that instant. These vessels, if not injured by the saw, may be torn when the cut ends of the bones separate. Therefore great care should be used in cutting through the bone, though if the incision is not deep enough, the spreading of the pelvic bones will be prevented by the ligaments. For this reason, before removing the saw an attempt to separate the bones should be made.

Unless the needle is passed under the guid-

ance of the finger, one may pass it through the obturator foramen and thus cut only the upper ramus of the pubic bone, instead of through the body of that bone. He concludes that, although hematoma is an unfortunate occurrence and exact hemostasis must be sacrificed, still subcutaneous hebotomy has enough advantages to be preferred over symphseotomy, especially since the hematoma apparently does not lead to serious results.—*Zentralblatt für Gynäkologie*, No. 36, 1905.

PYONEPHROSIS, PYELITIS, AND COMPRESSION OF THE URETER DURING PREGNANCY. By A. Sippel.

Sippel reports a case in a primipara whose pregnancy was normal up to the sixth month, when she suddenly developed temperature and backache on the left side. The urine was normal. In a couple of weeks a tumor developed on that side, just below the costal arch. This was the size of a fist, tender, tense, and fluctuating. It was found to extend back to the neighborhood of the kidney, and was diagnosed as a paranephritic abscess. The lumbar incision showed it to be inclosed in a dense capsule, and also that it was not paranephritic, but an abscess of the kidney itself. One and a half quarts of pus were evacuated and the cavity drained. The temperature disappeared, and after the fourth day the discharge took on a urinous character. The urine from the bladder still showed little change; so, believing that the ureter of the left kidney was compressed by the pregnant uterus, the patient was made to lie constantly on the right side, with the result that less urine came from the wound, and simultaneously there appeared a large quantity of pus in the urine from the bladder. Drainage was continued for three weeks, and then the fistula was allowed to close completely. The urine remained somewhat purulent, but was acid. The pregnancy continued undisturbed until the thirty-fifth week, when normal labor occurred, followed by a normal puerperium. Four weeks later, examination showed the urine still slightly cloudy and the kidney not perceptibly enlarged.

This case undoubtedly was due to an infection ascending from the bladder, the compression of the ureter, of course, favoring it.

The kidney pelvis on the right side is the one usually affected, for the ureter on that side is more easily and more often compressed. The interference with the flow of urine down the ureter also impairs the peristalsis of the ureter, allows easy entrance of bacteria, which find circumstances most favorable for further development, and thus easily spreads the infection to the kidney pelvis. Usually, the infection is due to bacillus coli, which permits the urine to remain acid in reaction, and frequently causes such slight alteration in the urine and in the bladder that it is overlooked, and has given rise to the notion that the simple stasis in the ureter of bacteria-free urine may cause fever. Observation has shown that in many cases the temperature may result from absorption at the point of compression of the ureter and not from the pelvis of the kidney, thus being analogous to urethral fever after catheterization.

The intestity of the affection of the kidney may vary greatly, showing the ordinary symptoms due to urinary stasis with few leucocytes and mucus in the urine, or the severe symptoms with large collections of pus, as shown by the case cited. The kind of infection and the degree of compression, whether complete or partial, also, are important factors.

In the past year Sippel has had opportunity to sucessfully treat another case of compression pyelitis in a pregnant woman by means of position,—i. e., having the patient lie on the opposite side,—and by the internal administration of urinary antiseptics. Bladder irrigations may also be necessary. Of course if the pyelitis is not due to compression, the position of the patient wound have no effect. If change of position does not relieve the compression, abortion is indicated, for the continuance of such condition, or of the urinary fistula after operation, would make a very dangerous complication. Obliteration of the ureter may also result from prolonged compression, pus infection being present. He has seen such a case in a non-pregnant woman in his own practice. He also believes that in the case cited if a more careful urine examination had been made, urinary changes might have been found, and perhaps the placing of the patient on the opposite side from that on which the compression was would have relieved the obstruction sufficiently to allow pus to pass down into the bladder, which would have helped to make the diagnosis clear.

No doubt, some of these cases remain unrecognized, or are diagnosed as appendicitis because of the fever and from the location of the pain. He knows of such a case in which the appendix was found normal, but spontaneous abortion occurred soon after the operation and completely relieved the symptoms.

As to the relation between eclampsia and embarrassment of the ureteral function, he says

that he believes that, first of all, there must be some change in the excretory processes of the kidney, and surely such changes can be favored by failure of the ureter to carry off the excretions. Undoubtedly, the change in intracapsular pressure within the kidney of pregnancy is also an important factor, and this, too, will be aided by compression of the ureter or by venous stasis. These things throw some light on the rationale of Edebohl's treatment of eclampsia by decapsulation of the kidney.—*Zentralblatt für Gynäkologie*, No. 37, 1905.

On the Effect of Ventral Fixation of the Uterus on Subsequent Pregnancy and Labor, Based on the Analysis of 395 Cases.

Andrews bases his conclusions upon Noble's collection of cases in 1896, and upon all recorded cases he has been able to find in English, French, German, American, and Italian literature since that time.

I. *Has hysterectomy any influence upon subsequent pregnancy and labor?* He answers this question under different headings, and comments as follows:

(*a*) "*Abortion.*"—As it is, we can only say that the evidence before us does not point to the fact that ventral fixation is very likely to cause abortion in subsequent pregnancy."

(*b*) *Disturbance during pregnancy.*—"Pain occurs in a considerable proportion of cases of pregnancy after ventral fixation."

(*c*) *High position of cervix.*—"Is recorded in many cases, and causes the most common difficulty met with after ventral fixation."

(*d*) *Lateral asymmetry or torsion of the uterus.*—"Noted in 5 cases. Cæsarean section performed in 3 cases; version in 2."

(*e*) *Malpresentations.*—"There can be no doubt but that ventral fixation sometimes causes malpresentation,"

(*f*) *Rupture of the uterus.*—"In 3 cases out of 189."

(*g*) *Cæsarean section.*—"In 16 out of 189 cases, there can be no doubt but that the difficulty of labor was due to the fixation in 10 of these. The evidence is less strong in the other cases."

(*h*) *Postpartum hemorrhage.*—"So few cases have occurred, that, assuming that they would have been reported, we can conclude that postpartum hemorrhage is not a common sequellam of ventral fixation."

II. "*Are the difficulties in labor due simply to the fact that the uterus is fixed or are they associated with any particular method or technic?*"

He reviews the different methods of performing the operation, and then says: "The conclusion which is forced upon one from the foregoing table is, that the method of performing ventral fixation which causes the least difficulty in a future labor is that in which the uterus is fixed to the peritoneum alone, or to the peritoneum and subperitoneal connective tissue. The chief theoretical objection to this method is that the fixation, or, as it is frequently called, "suspension," will not be permanent."

"Fixation of the anterior wall appears from the foregoing table to be followed by less serious difficulties in labor than is fixation of the fundus."

He draws the following conclusions from the 395 cases:

1. Ventral fixation may be the cause of great difficulties in labor.

2. These difficulties are due to a too rigid fixation of the uterus. Rigid fixation of the anterior wall is not followed by so much difficulty as is fixation of the fundus or posterior wall.

3. The method of fixation involving least difficulty in labor is that in which the uterus is attached only to the parietal peritoneum and subperitoneal connective tissue.

4. In women who may become pregnant after the operation, it is not advisable to anchor the fundus or posterior wall of the uterus by firm adhesions such as would be useful in cases of prolapse in older women; in other words, "suspension" should be performed in women who may subsequently become pregnant; "fixation in older women."—*Jour. of Obstet. and Gyn. of Brit. Emp.*, Aug., 1905.

REVIEWS

ABDOMINAL OPERATIONS. By B. G. A. Moynihan, M.S. (Lond.), F.R.C.S. Philadelphia: W. B. Saunders & Co., 1905.

This work by the well-known Leeds surgeon is fully up to the standard we would expect from one who has had his wide experience. Books of this character may be divided into two classes: 1. Those which are a compilation of all the known methods of operative technic; and 2. Those which choose a few of the better known methods applied to each operation and which the author has had occasion to test by personal experience. It is to the latter of these that Moynihan's book belongs. Thus we are relieved from the many tiresome details of obsolete operations which are probably essential in a student's text-book, but are entirely out of place in a monograph such as this, which attempts to give only the present-day technic. We have here a rare opportunity for a display of individuality, and he has given his brother practitioners the accumulated results of his experience. For this reason it should be upon the shelves of every surgeon.

Nowhere is this individuality better shown than where we read that this associate of Mayo Robson deliberately omits any reference to any mechanical device, button, or bobbin, since he believes "that the purpose of these mechanical aids has been served, and that their interest is now only historical." He favors multiple incisions and drainage-tubes in general peritonitis.

It is in the chapters dealing with pancreatic disease, gastric ulcers, and stomach surgery in general, that Moynihan gives us his best work. Here his wide experience has been applied with the best effect. Conservative and well-balanced statements are made without dogmatism. Treatment of ulcers during hemorrhage is well discussed, and finally, in relation to the treatment of ulcers in general, he makes favorable quotation from Mikulicz, that gastroenterostomy combined with jejunostomy will probably be the operation of the future, although he also speaks of gastroenterostomy combined with gastrostomy as suggested by Rutkowski and Witzel.

The practical surgeon will be particularly pleased with the section dealing with the complications after gastroenterostomy.

Under the operative treatment of carcinoma of the stomach, he speaks most favorably of gastrectomy, and gives the technic in detail, and in this relation draws attention to the fact that gastrectomy in the hands of Mikulicz has given a lower mortality than gastroenterostomy.

It is particularly pleasing to the American to see the extensive citation from our literature and the prominence given operations devised by our surgeons. His favorite method of gastrostomy is the well-known method of E. J. Senn.

He speaks more favorably of Talma's operation and laparotomy for tubercular peritonitis than the experience of the average American surgeon would justify.

It is a book of nearly seven hundred pages, printed on heavy enameled paper, designed to carry the numerous excellent illustrations, which enhance its utility. Its manner of publication is a credit to the book-maker's art. We gladly recommend it to the American surgeon.

A TEXT-BOOK OF THE DISEASES OF THE WOMEN. By Barton Cooke Hirst, M. D. Second edition, rewritten and enlarged, with 701 illustrations. Philadelphia: W. B. Saunders & Co. 1905.

This well-known and deservedly popular text-book opens with a chapter on gynecological examination and local treatment. The instructions are terse and concise. The necessity of asepsis in examinations is dwelt upon. The use of the uterine sound is justly decried, and the frequency of its application in examinations arbitrarily fixed by the dictum, "A busy gynecologist should scarcely employ a uterine sound once in six months." This practically takes the sound out of the hand of those who are unacquainted with its dangers.

In the chapter on Diseases and Injuries of the vagina, the repair of the lacerated perineum is given adequate attention, the author favoring the Emmet, operation, and describing it carefully and lucidly. The other operation recommended for some cases is Hegar's. Silkworm-gut is recommended as a suture material, and the use of catgut in the vagina is disapproved.

Carcinoma of the cervix and body of the uterus is fully described. The vexed question as to the relative value of the abdominal operation with re-

moval of the glands (the Ries or Wetheim operation) and the vaginal operation naturally comes up. The author's statement that "It is a moot question whether the lymphatic glands should always be removed, as in the operation for cancer of the breast," deseribes his position. Why cancer of the uterus should be differently treated in this particular than cancer of the breast, tongue, lip, etc., is a question not satisfactorily answered by the author. The vaginal operation seems to be preferred, as indicated by the statement, "The vaginal method is preferable if the woman is very fat, if the operation promises to be particularly easy and rapid, and if the patient's general condition is not good.

Considerable space is given to the non-operative treatment of uterine displacements, which is to be commended. A special effort has been made throughout the work to describe palliative treatment.

The author has not followed the plan of considering together inflammations of the various organs; instead, we find endometritis, salpingitis, orphoritis, etc., described in various chapters. This is in conformity with the author's statement in the preface, that an anatomical rather than a pathological classification is followed. While this may have seemed advantageous to the writer, it would appear that a better idea of the unity of the inflammatory processes of the female sexual organs could be conveyed together, rather than when scattered throughout the work.

A chapter on the technic of operation and after-treatment of patients closes this admirable textbook, which should be exceedingly instructive to the student.

The author's style is pleasing and lucid. Theories are not discussed at length, to the exclusion of facts. The personal experience of the author, which appears to have been extensive, is repeatedly drawn upon to decide questions when judgment is necessary. It is pleasing to note that responsibility is not evaded by a multiplicity of quotations from other authors, the author not being afraid to commit himself by stating a decisive opinion.

As to the printing, illustrating, and binding of the book itself, suffice it to say that these are in conformity with the excellent examples of the book-maker's art which we have become accustomed to expect from the Saunders Company.

PAUL F. MORF, M. D., Chicago.

PRACTICAL MASSAGE IN TWENTY LESSONS. By Hartwig Nissen, Instructor and Lecturer in Massage and Gymnastics at Harvard University Medical Summer School. Philadelphia: F. A. Davis Company.

This little treatise of one hundred and sixty pages is just what it purports to be. The first hundred pages deals with the general details of massage, while the latter third discusses its use in the various conditions in which it may be found helpful. Naturally, since it comes from the pen of one who is not a physician, but has had an extensive experience in his profession, the first part appeals more to the physician than the latter. However, even here the detailed prescriptions for various diseases will be found suggestive to the scientific practitioner.

BOOKS RECEIVED.

Lehrbuch der Vibrationsmassage mit besonderer Berucksichtigung der Gynaekologie. By Dr. Kurt Witthauer. Oberarzt an diakonissenhaus zu Halle, A. S. Mit 18 Abbildungen. Price 4 marks. Publisher, F. C. W. Vogel, Leipzig.

Transactions of the Western Surgical and Gynecological Association meeting, December, 1904.